THE ADVERSE CHILDHOOD EXPERIENCES (ACEs), MINDFULNESS, AND ADOLESCENT (AMA) HEALTH STUDY: ADDRESSING HEALTH AND WELL-BEING IN SCHOOLS AND ADVANCING THE SCIENCE OF SOCIAL JUSTICE IN PUBLIC HEALTH AND EDUCATION

by
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A dissertation submitted to Johns Hopkins University in conformity with the requirements for the degree of Doctor of Philosophy

Baltimore, Maryland
September 2020

Abstract

Background: Adverse childhood experiences (ACEs), trauma, and mental health are syndemics (synergistic epidemics) impacting adolescents in the US (and globally), leading to poor health and life outcomes across the lifespan and intergenerationally. Research shows mindfulness-based interventions (MBIs) can prevent and dismantle these detriments and rewire healthy patterns. This pilot study examined the implementation and biopsychosocial impacts of the Peace in Schools mindfulness course, the first for-credit mindfulness class in US public high schools.

Methods: The ACEs, Mindfulness and Adolescent Health (AMA) Study (IRB No.: 00008608) was conducted with 205 participants, including 171 adolescents (ages 15-18) enrolled in the PINS Mindful Studies course in three diverse public high schools in the Portland Public School (PPS) District. The study consisted of a process evaluation and an outcome evaluation. Data was collected via a pre/post-survey and four qualitative methods: seven focus group discussions (FDGs) with youth (n=87); 34 in-depth interviews (IDIs) with parents, teachers, student alumni, school staff, and youth MBI experts; 10 class and training observations; and a program document review. Qualitative data was analyzed using an inductive/deductive thematic approach informed by a conceptual framework. Survey data measured neurocognitive, psychological, and social outcomes at baseline and post-intervention via a computerized survey. Principal component analysis (PCA), exploratory factor analysis (EFA), and paired t-tests were used to determine whether significant changes could be detected in neurological (e.g., executive function, attention), psychological (e.g., anxiety and depression symptoms), and social (e.g., social connectedness) outcomes. Analyses also examined whether outcomes differed by subgroup, including school, grade, gender, sexual orientation, race/ethnicity, nativity, and socioeconomic

status (SES). Three variables were examined for moderation effects: ACEs, readiness for change, and class dose.

Results: The PINS program demonstrated broad reach, high fidelity, and largely positive participant experiences attributed to embodied mindfulness teaching, the cultivation of community in the class, course depth and duration, and the curriculum's focus on equity, trauma, and diversity. Survey results showed that students with high ACEs exposure and mental health challenges, including high levels of anxiety and depression, and low coping skills demonstrated improved self-regulation, self-compassion, coping, anxiety, and depression symptoms after participating in the PINS Mindful Studies course. Additionally, adolescents who were female, gender non-binary, and lesbian, gay, bisexual, transgender, and queer/questioning (LGBTQ+), low-income (who represent historically marginalized groups) exhibited greater gains in self-compassion, expression suppression, anxiety symptoms, depression symptoms, and self-harm ideation compared to their non-marginalized peers. Having higher ACEs, being in a more advanced stage of readiness for change, and being a first-time student was shown to positively moderate program effects.

Conclusions: Quality school-based mindfulness interventions like the Peace in Schools Program hold promise as an accessible, affordable way to promote, prevent, and address adolescent mental health problems, ACEs, and trauma, especially among high-risk groups. Further research is needed, especially with youth and diverse populations. Mindfulness research, policy, and practice holds great potential for enhancing public health and education effectiveness in this time of growing need and in contexts with scarce resources, high diversity, and social division.

Funding: This research was supported by the Brown Community Health Scholars program, additional funding provided by Dr. Mmari in the Department of Population, Family, and Reproductive Health, and a Bloomberg American Health Initiative Evidence Generation Award.

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Preface: Homage and Dedications

This dissertation is in homage to victims of systemic trauma, oppression, and injustice, including George Floyd, Damaritus, Breonna Taylor, Robert Fuller, Rayshard Brooks, Ahmaud Arbery, Freddie Gray, Michael Brown, Eric Garner, Philando Castile, Trayvon Martin, Justin Howell, Sean Monterrosa, Jamel Floyd, and so many others whose right to life was violated; global indigenous peoples; victims and perpetrators of violence, colonization, genocide, oppression, and injustice. May mwe all awaken to our oneness, honoring those who came before us and future generations. No justice, no peace. Somos un@.

May all beings everywhere be safe, happy, healthy, and free.

The people, united, will never be divided.

This labor of love is also dedicated to those who have loved me through the madness.

Firstly, my partner, Sam Kirwan, for a depth of love I have only known with youme.

Secondly, my parents, siblings, abuelos/as, ancestors, Earth, my hood brothers from Northeast Minneapolis, friends and framily, mi familia en Cuba, the Mwe Council, l@s Mejias, anam cara around the world (in Brazil, Uganda, Europe, and elsewhere), teachers, mentors, allies and spiritual guides, and Spirit, through which we can breathe possibilities into being.

Please forgive the harms and stress my completing this gauntlet has caused,

and please receive the depth of my gratitude for all you are and do.

This research is also a reflection of your brilliance.

We are a constellation, rising rooted.

Ad astra per asperum.

Love wins.

Om

Acknowledgements

"May the gratitude in my heart kiss all the universe." ~Hāfez, 14th century Persian poet

I am deeply grateful for the support I have received to complete this dissertation. First, to all those who have given me love, strength, and encouragement on my journey, especially my husband, Sam Kirwan, my siblings, mom, other family, and friends. I also deeply bow to myriad ancient and modern contemplative and scientific teachers and practitioners, the ancestors, future generations, all living systems, and Spirit who have inspired—breathed life into—this work.

Next, I would like to thank my partner organization, Peace in Schools, especially Barnaby Willett and Caverly Morgan who helped sow and co-germinate the idea for this study, Janice Ownbey, and Sam Hendricks, as well as PPS partner teachers, the Portland Public School District, and many others for helping this project to take root and bloom. I am humbled by and extremely grateful to the youth, families, and communities who participated, extended their trust, and allowed me a glimpse into their classrooms and inner worlds in service to youth everywhere.

Additionally, I am thankful beyond words for my advisor, Dr. Kristin Mmari, for her outstanding guidance and support at every step, professionally and personally. She has set an impeccable bar for mentorship that I aspire to pay forward. I am also appreciative of the other members of my committee—Drs. Anne Duggan, Tamar Mendelson, Danielle German, and Erica Sibinga—and alternate committee members, Drs. Terrinieka Powell and Renee Johnson, for their thoughtful review of my work. Also, a special thanks to Mengmeng Li for her statistical support.

Finally, I am grateful to Eddie and Sylvia Brown and the Brown Scholars Program, which funded five years of my education and research, and for additional funding provided by Dr. Mmari and the Bloomberg American Health Initiative Evidence Generation Award. And thank you to my fellow students and Brown Scholars for your camaraderie. Mil gracias a todos.

Table of Contents

List of Tables

Chapter 2: Literature Review, Program Description, and Conceptual Framework

Chapter 3: Research Design and Methods

Chapter 4: Results

List of Figures

List of Acronyms

ACASI	Audio computer-assisted self-interview, a survey technology
ACC	Anterior Cingulate Cortex
ACE	Adverse Childhood Experiences
ACH	Accountable Health Communities
ACT	Acceptance and Commitment Therapy
ACTeRs	ADD-H Comprehensive Teacher's Rating Scale
ADHD	Attention Deficit/Hyperactivity Disorder
AI/AN	American Indian/Alaska Native
AMA	Adverse Childhood Experiences, Mindfulness & Adolescent Health Study
ANS	Autonomic Nervous System
AST	Automatic self-transcending
B-M	Body-Mind
BIPOC	Black, Indigenous, and People of Color
BRFSS	Behavioral Risk Factor Surveillance System
BRI	Behavior Regulation Index
BRIEF	Behavior Rating Inventory of Executive Function
CAMs	Complementary and Alternative Medicine
CARE	Environment of CARE: Confidentiality, Acceptance, Reverence, and Empathy
CBT	Cognitive-based Therapy
CBPR	Community Based Participatory Research
COPD	Chronic Obstructive Pulmonary Disease
CRI	Cognitive Regulation Index
CTES	Childhood Traumatic Events Scale
CTS	Conflict Tactics Scale
DBM	Deep Breathing Meditation
DBT	Dialectic Behavior Therapy
EBM	Emotional, Mental, or Behavioral conditions
EBMC	East Bay Meditation Center
EEG	Electroencephalogram
EFA	Exploratory Factor Analysis
EMDR	Eye Movement Desensitization and Reprocessing
EMG	Electromyographic Biofeedback
ERI	Emotion Regulation Index
ERQ	Emotion Regulation Questionnaire
ESL	English as a Second Language
FA	Focused Attention
FGD	Focus Group Discussion
GAD-7	Generalized Anxiety Disorder-7
GBV	Gender-based violence
GEAS	Global Early Adolescence Study
GEC	Global Executive Composite
HPA	Hypothalamus-Pituitary-Adrenal, or HPA-axis
HS	High School
HSRS	Human Stress Response System

IDI	In-depth Interview
IFS	Internal Family Systems
IPNB	Interpersonal Neurobiology
IPV	Intimate Partner Violence (*a type of GBV*)
IRB	Institutional Review Board
LM	Logic Model
LONGSCAN	Longitudinal Studies on Child Abuse and Neglect
M-B	Mind-Body
MBCT	Mindfulness-based Cognitive Therapy
MBI	Mindfulness-based Intervention
MBPR	Mindfulness-based Relapse Prevention
MBSAT	Mindfulness-based Substance Abuse Treatment
MBSR	Mindfulness-based Stress Reduction
MDD	Major Depressive Disorder
MED-RELAX	Meditation-relaxation
MICS3	Multiple Indicator Cluster Surveys Study by UNICEF
MPFC	Medial Prefrontal Cortex
NH/PI	Native Hawaiian/Pacific Islander
NSCAW	National Survey of Child and Adolescent Well-Being
NSCH	National Survey of Children's Health
OM	Open Monitoring
PAR	Participatory Action Research
PCA	Principal Factor Analysis
PE	Physical Education
PFC	Prefrontal Cortex
PII	Personally Identifiable Information
PINS	Peace in Schools
PNS	Parasympathetic Nervous System
POC	People of Color
PPS	Portland Public Schools
PRM	Progressive Muscle Relaxation
PSS	Perceived Stress Scale
PTSD	Post-traumatic Stress Disorder
RCT	Randomized Control Trial
REDCap	Research Electronic Data Capture
RESJB	Racial equity, social justice, and belonging
RSE	Recent Stress Experiences
SAMSHA	Substance Abuse and Mental Health Services Administration
SCS-SF	Self-compassion Scale-Short Form
SEL	Socioemotional Learning
SES	Socioeconomic Status
SM	Sajaha Meditation
SNS	Sympathetic Nervous System
SRMC	Spirit Rock Meditation Center
SSM	Sajaha Samadhi Meditation
SYM	Sahaja Yoga Meditation

TM	Transcendental Meditation
TIC	Trauma-Informed Communities
TIO	Trauma-Informed Oregon
TOC	Theory of Change
TTM	Transtheoretical Model
URICA	University of Rhode Island Change Assessment Scale
US	United States
USB	Universal Serial Bus, a type of handheld recording device
VUE	Visual Understand Environment, a computer program used to develop TOCs
WHO	World Health Organization
WSC	White Supremacy Culture
YRBS	Youth Risk Behavior Survey

Chapter One: Background and Specific Aims

"Injustice anywhere is a threat to justice everywhere." ~Rev. Dr. Martin Luther King, III.

Introduction

Trauma is the leading public health issue of our time, and is a syndemic, or synergistic epidemic with adverse childhood experiences (ACEs) and mental health crises. These problems are linked to poor health and life outcomes across the lifespan and intergenerationally—much of which stems from pervasive systems of racism, inequity, and oppression that extend to the areas of public education and health.[1] Scientific evidence increasingly shows that mindfulness, a secular set of practices and way of being that cultivates awareness of the present moment with non-judgement[2] or open curiosity[3] and derived from Asian and indigenous peoples, is a powerful antidote to trauma.[a] It can rewire dysfunctional[b] patterns in the brain, body and behavior from trauma and, thus, holds great promise for beginning to heal and dismantle somatic oppression. Yet, if delivered unskillfully and without a trauma-informed, equity-centering, and culturally responsive approach, it can have little-to-no effect or deepen trauma, especially in vulnerable groups.[4] The Adverse Childhood Experiences (ACEs), Mindfulness, and Adolescent Health (AMA; *meaning "s/he/they love/s" in Spanish*) Study examined the impacts and implementation of the Peace in Schools (PINS) program, the first mindfulness program taught for-credit in US public high schools. Mixed methods and transformative evaluation approaches were employed, and generated, over the course of the study to embody racial equity, social justice, and belonging (RESJB) practices in the research design and implementation. Critical epistemology, axiology,

[a] "Wheel symbols representing complex visions of the cosmos and holistic views of growth and healing have been used for thousands of years by indigenous peoples of North and South America, the Caribbean, Africa, South and East Asia, the South Pacific, and ancient Europe (Bopp, et al., 1989; Bopp and Bopp, 2001; Lorler, 1991)." Quinones Rosado. *Consciousness-in-Action: Toward an Integral Psychology of Liberation and Transformation.*

[b] "Dysfunctional" here is used "as a useful description and not as an absolute negative judgement" as explained by bell hooks, esteemed scholar on wellbeing, systems transformation, justice, race, class, and other topics, in *All about Love: New Visions.* New York: Harper Perennial, 2000.

pedagogy, and methodology were also applied to, and emerged from, the study, in addition to traditional approaches and findings.

The study aims were to:

Aim 1: Assess the implementation of PINS with a process evaluation

Aim 2: Identify whether PINS produces outcome changes in adolescent health and wellbeing: which outcomes had greatest effect sizes, if they differ by level of ACEs or other characteristics (e.g., gender, sexual orientation, race/ethnicity, socioeconomic status [SES], etc.), and whether they were aligned with expected outcome changes in the TOC

Aim 3: Develop a logic model and theory of change (TOC) outlining *whether* and, if so, *how* PINS mindfulness classes improve adolescent health/well-being

Background

Abuse, neglect, and family or community challenges experienced by age 18, referred to as ACEs, are widespread: two-thirds of US adults have at least one ACE and nearly 40% have two or more.[5] ACEs and resulting trauma are linked to poor health outcomes and high healthcare and societal costs, and the risk for negative outcomes increases with ACE number and exposure.[6,7,8] ACEs can shape the life course, be transmitted across generations, and have multilevel impacts.[9,10,11,12,13,14]

Mindfulness-based interventions (MBIs) are an approach that can promote resilience and health, and reduce the harms of ACEs and trauma[15,16,17,18] in a way that is often accessible and affordable.[19,20,21,22] Mindfulness is the skill of being aware in the present moment non-judgmentally, and can be honed through activities like breathing exercises, meditation, yoga, and practicing compassion.[23] MBIs may be particularly effective during adolescence, a critical period when rapid cognitive, physical, and socioemotional development occurs.[24,25,26,27] MBIs can

improve mental and physical health and help youth develop coping, life, and social skills.[28,29,30,31,32,33]

Studies assessing the effectiveness of MBIs among youth, with diverse populations, and in schools are scarce. Additionally, to our knowledge, this is the first study to examine the impacts of an MBI by level of ACEs—a noticeable lacuna in the fields of mindfulness, trauma research, public health, and education. Further, a few partial and high-level theories of change explaining how MBIs affect adult health exist, but theories of change explaining the mechanisms by which MBIs lead to positive health outcomes in adolescents are needed. Theories of change should account for differences in adolescent development processes, youth with ACEs/trauma, and the unique settings and contexts in which MBIs are implemented with youth.[34,35]

Partnering with Peace in Schools (PINS), the first organization to offer for-credit mindfulness classes in US high schools, this study assesses the effects of MBIs on health/wellbeing among youth, including among those with ACEs.[36] Evaluating the PINS Mindful Studies class is important because along with a traditional mindfulness curriculum it promotes physical and mental wellness, addresses some of the impacts of trauma, and, thus, has the potential to improve health and life outcomes. Given that PINS has offered classes in 90% of the PPS high schools, this pilot study examines the potential effectiveness of mindfulness programs in diverse, urban public-school settings.

This study will also advance our understanding of how MBIs lead to improved health outcomes among youth, particularly those with ACEs and trauma.[37] Further, assessing PINS implementation and outcomes can inform and improve youth MBI program theory and practice.[38] For example, determining the outcomes in youth with ACEs that are most likely to change, and why, may offer insights into how to optimize implementation and maximize the

positive effects of PINS classes, and possibly other MBIs, for those with high trauma and risk of poor health. Therefore, this study will add to the evidence base assessing the viability of school based MBIs for public health promotion and prevention, and public education enhancement.

Critical Epistemology, Axiology, and Social Justice in Public Health

> This dissertation has been underpinned by a foundational, rarely acknowledged truth: *Hegemonic narratives…that inform mainstream constructions of American identity (rooted in an epistemic perspective of white Americans) propose that the US is essentially good: a shining beacon of human progress and a place of freedom and equality. These narratives do not dispute difficult-to-deny facts about racial [and other forms of systemic] violence (e.g., slavery, legal segregation, lynching, [pervasive medical apartheid experienced by POC and marginalized groups in America,*[39,40,41] *discrimination rampant in public health systems,*[42] *colonization of global mental health especially in the 'Global South',*[43] *etc.]) Instead, they incorporate this knowledge into celebratory accounts of US identity in a way that does not disrupt the status quo and require drastic/revolutionary action to remedy.*[44]

This has led to the normalized exclusion and marginalization of many valuable voices along lines of power, privilege, wealth, and access, particularly in academic institutions and entire fields, including medicine and public health—reifying systems of inequity and oppression. This dissertation was conducted and written in that context. Upholding the highest values of academic integrity includes dismantling bias to ensure we get to the truth or come to valid conclusions. This includes *seeing* and *seeing beyond* hegemonic (dominant social and political) narratives that shape the American context and the field of public health. This work was conducted and written

in defiance of hegemonic narratives and practices to advance the field of public health—also known as the Science of Social Justice[45]—toward the equitable advancement of true health and well-being for all. I also hope that this work catalyzes a movement for critical pedagogical review and reflection by students, professors, administrators, and practitioners in higher education, public health, and beyond to ensure the broad unbiasing application of racial equity, social justice, and belonging (RESJB) principles and embodied decolonizing approaches.[46,47]

This dissertation was integrally informed by and led to the development of critical and transformative epistemological and axiological approaches steeped in RESJB principles. Epistemology is the theory of knowledge, particularly the examination of what methods, sources, and scope of information is considered a valid source of knowledge. Axiology is the study of the nature of what has value or worth and valuation, or how it is measured. During this study, critical epistemological and axiological questions have consistently been asked about what sources of knowledge should be valued, considered, and included. This has led to the inclusion of valid, valuable sources of knowledge beyond peer-reviewed literature that have been systematically been excluded and devalued, often works by people of color (POC). It also included surmounting numerous pervasive structural barriers to become an academic and designing a study that would be tailored to and honor the unique strengths and vulnerabilities of participants who were urban youth, primarily low-income, many POC or immigrants, having high trauma exposure, and/or being marginalized in other ways, such as identifying as lesbian, gay, bisexual, transgender, or queer/questioning, asexual, pansexual, intersex, two-spirited, and in other ways (LGBTQ+).

This work also owes so much of its strength to and builds on a crucial discourse among scholars at the nexus of mindfulness and contemplative practice, science, and anti-oppression/co-liberation studies, practice, and praxis. In addition to applying leading public health lenses and

approaches, critical lenses from feminist theory, queer theory, economics/class studies, ethnic studies, Africana Studies, Chicanx/Latinx Studies, Indigenous Studies, and Liberation Studies were applied throughout all phases of this research.[48,49]

Dissertation Overview

This dissertation is presented in five chapters. This chapter discussed the background for the study aims. Chapter two presents a literature review and study rationale, as well as the conceptual framework used to guide the research. Chapter three presents the study design and methods for the process and outcome evaluations comprising the study. Chapter four outlines results from mixed methods data analysis, organized by the primary aims of the study, including the results of both the process and outcome evaluations, as well as the development of a new theory of change. Chapter five concludes the dissertation with a discussion of key findings of each aim, the strengths and limitations of this study, and the public health implications and conclusions.

Chapter Two: Literature Review, Program Description, and Conceptual Framework

"Conscious work [including mindfulness and yoga practices] with and through the body could not only begin to ameliorate symptoms of trauma, but this work could also serve as a resiliency factor for subsequent trauma symptoms." ~Lucia Bennett Leighton[50]

"Each of us, in any and every moment, can, if we remember to do so, cultivate insight into deep inequalities and injustices, especially around race and gender. Awareness is capable of holding all of this in a given moment, and seeing things as they are… In taking in what is unfolding, we radically accept the entirety of it in the moment, even as we discern the injustice, harm, delusion, oppression, and structural forces that sustain it all." ~Rhonda Magee[51]

Overview

This chapter begins with foundational framing for this dissertation by discussing hegemonic narratives and practices that shape the context in which this study took place; and then provides a review of the literature on ACEs, trauma, and related mental health problems. Following introductory framing, the chapter reviews literature on ACEs and trauma in the US, including context and definitions. Next, the biopsychosocial mechanisms of ACEs/trauma and their sequalae are reviewed, and the etiology, risk factors, trends, multilevel public health impacts, and multilevel approaches to address ACEs/trauma are discussed. Then, research in the fields of ACEs, trauma, and mindfulness and their effects on health and life outcomes are discussed, with a focus on marginalized populations. This leads the way for the next section, which describes the landscape of MBIs and a detailed description of the Peace in Schools Program. The chapter ends with a presentation of the rationale for this research, including how it addresses gaps in the field, and concludes with a conceptual framework guiding the research.

Foundational Framing: Hegemonic Narratives and Practices, and Implications for ACEs and Trauma-related Research and Practice

RESJB and Hegemonic Narratives in Public Health

Dominant epistemological, axiological, pedagogical, and methodological frameworks that create, perpetuate, and deny systemic oppression are pervasive in our world today, including

in the field of public health. Thus, it is vital to discuss these dominant or hegemonic narratives and practices because they are an integral part of the context in which this study (and most other public health research) takes place. Hegemonic narratives privilege some groups, relegate others, and therefore introduce bias and research ethics violations, which are substantial but rarely acknowledged. These narratives and practices are sources of ongoing racial inequity, social injustice, and othering and division in public health research. Thus, it is important to apply a critical lens racial equity, social justice, and belonging (RESJB) lens to this dissertation study.

A racial equity lens or framework sees and acknowledges the reality of racism at the individual, interpersonal, and institutional levels; uses this shared understanding to set goals, plan, act, and hold itself accountable; and strives to achieve a condition in which "one's racial identity no longer predicts, in a statistical sense, how one fares."[52] Social justice applies this same approach to praxis (reflection and action) to advance the fair distribution of wealth, opportunities, and privileges within a society along *any* lines of difference (e.g., sexism, classism, heterosexism, global neo/colonialism, etc.). Applying an RESJB lens includes explicitly naming, identifying, and dismantling hegemonic frameworks and narratives through every phase of research to: 1) enhance validity of research design, data analysis, and presentation of findings; 2) restore ethics to public health research; and 3) begin to redress legacies of oppression in public health, particularly toward marginalized groups.

Applying an RESJB lens to the AMA Health Study

The mechanisms underlying ACEs, trauma, and related health and life problems are not yet fully understood, as the science is still evolving in these areas. However, there are over 40 years of scientific research in this area, and a thorough review of the literature evidences that much that is known has intentionally been excluded from dominant paradigms, discourse,

teaching, and publication because of how deeply rooted ACEs and trauma are to historical and present-day systems of oppression. One example of how hegemonic narratives significantly shape the AMA Health Study can be seen by applying an RESJB lens to see a harmful hegemonic narrative in the CDC-Kaiser ACEs pyramid. (See Chapter 3 for a more on RESJB).

The creation of the ACEs pyramid is a prime example of White Supremacy Culture (WSC), colonizing, and medical sanitizing practices in public health that introduce bias and violate research ethics. To illustrate, when the AMA Health Study was designed and approved (2017-2018; Fig. 2.1), the CDC's ACEs Pyramid, a diagram showing the mechanisms by which ACEs function, began with ACEs presenting at the individual and family levels and ultimately resulting in greater disability and disease, and early death. This has been the leading model for over 20 years. While ACEs research began in 1995-97 and the disproportionate burden of ACEs on low-income, racial minority, and other underserved communities was uncovered, the CDC-Kaiser ACEs Pyramid diagram failed to include any mention of institutional, intergenerational, or historical trauma linked to systematic oppression until 2019—over 20 years later. Upon examination, we see that factors beyond the individual and family were not included in the CDC's version (Fig 2.2), and that this more updated version is missing at least a third of the appropriate content as supported by the literature (Figs. 2.3, 2.4).

Language matters. The additional language below "ACEs" in today's CDC pyramid (Fig. 2.5), only added in the past two years after the AMA Health Study's design and approval, still fails to name the *leading* source of the cascade of health detriments up the pyramid: structural discrimination and oppression, or as Resmaa Menakem—leading trauma researcher, educator and trauma-healing practitioner—names it "persistent and pervasive group, institutional adverse experiences" (Figs. 2.3, 2.4).[53] In the CDC's present pyramid, "Social conditions / local

Fig 2.1. CDC-Kaiser ACEs Pyramid, Sept. 2018
(AMA Health Study began)

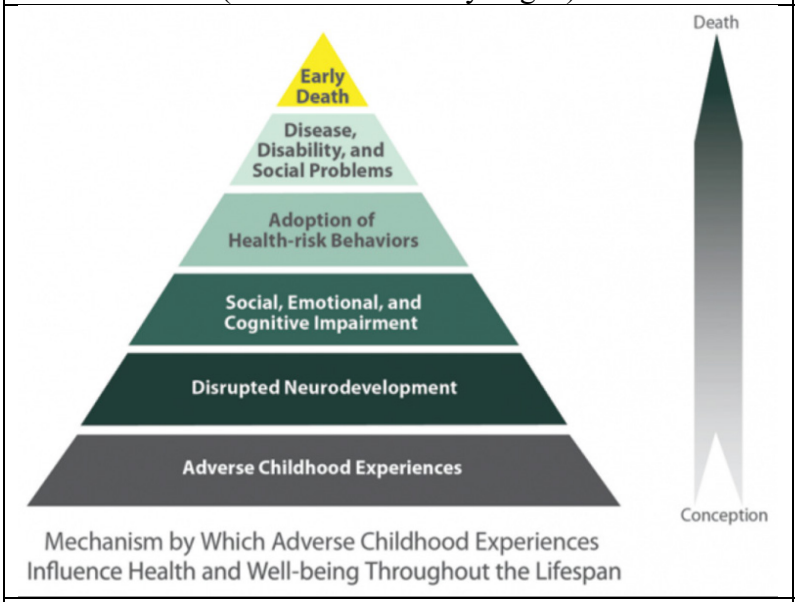


Fig. 2.2. CDC-Kaiser ACEs Pyramid, May 2019
(AMA Health Study ended)

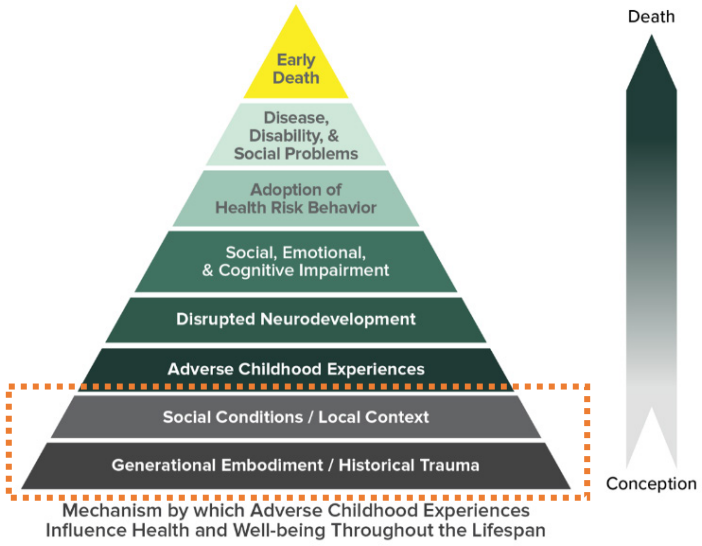


Fig. 2.3. Pyramid of Compounding Trauma, including ACEs, 2018
(*book by trauma expert Resmaa Menakem*)[54]

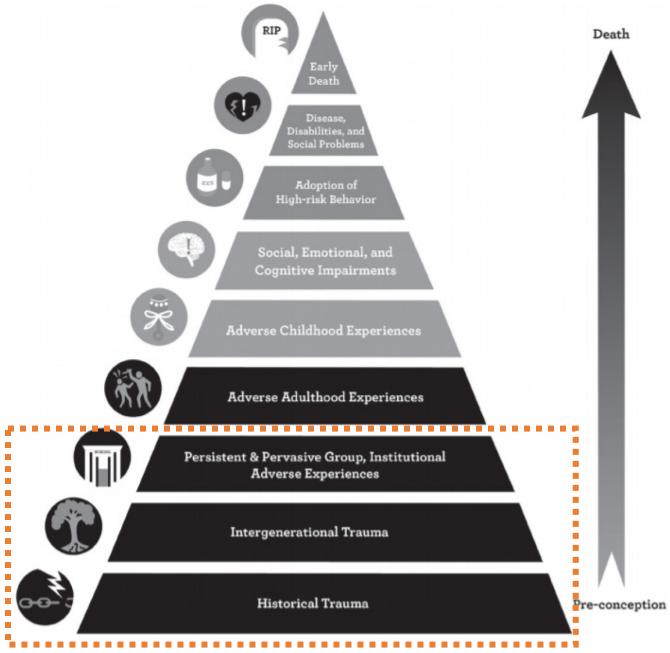
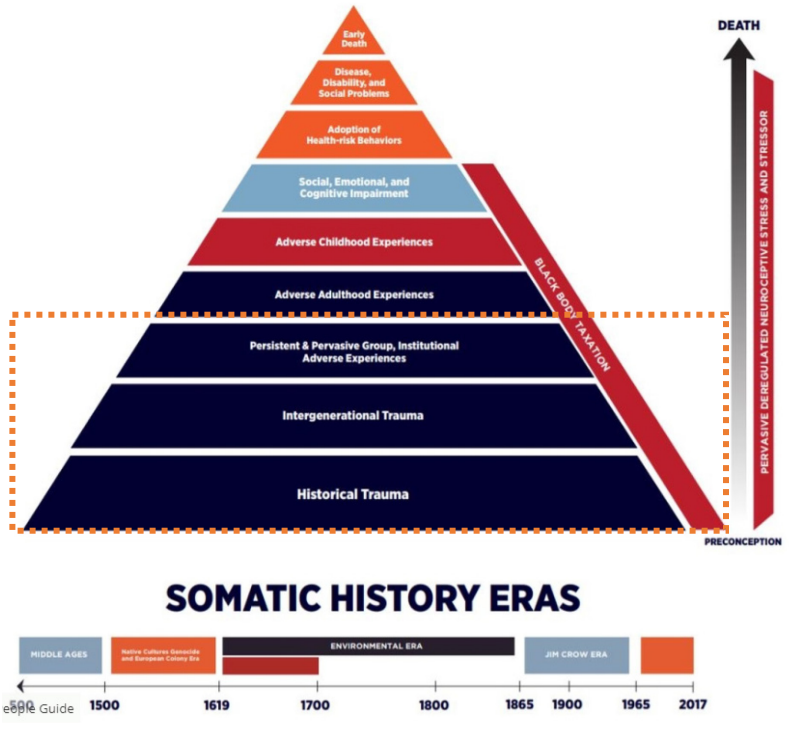


Figure 1. How Trauma Compounds
(Based partly on a figure used in the Adverse Childhood Experiences Study.)

Fig. 2.4. Pyramid of Compounding Trauma and Somatic History Eras, 2019
(*Whole People Guide, co-authored by Resmaa Menakem and his wife Pam Beckering, both experts in the field*)



prevalent implies either that causes are unknown and/or inherent to the people and communities they affect—thereby subtly implying that the people in these communities are responsible for these conditions, and the resultant cascade of health problems. "Generational embodiment / historical trauma" is closer to an appropriate addition (Fig 2.5), but still there are at least three major, avoidable problems with CDC-Kaiser's choice of language that have deep public health implications:

1. **For decades and still today, CDC-Kaiser chose/chooses to name a set of symptoms, but not many of their known causes.** Historical trauma is the result of systemic oppression, discrimination, and injustice. When a disease spreads or a trauma is suffered, as public health practitioners we seek to know, name, and understand its causes to comprehend the mechanisms by which we can treat it. This is vital to healing existing injuries and preventing future injuries. This public health and epidemiologic best practice should be applied to the syndemics of ACEs, trauma, and mental health. For example, when a case of food poisoning occurs, the CDC tracks its source. They would not choose to only include "vomiting among a group of people who all ate at the same location" in a pyramid of the mechanisms of this illness, they would also include the cause, such as "contaminated food source from XYZ store/restaurant/food supplier." The ACEs pyramid omission an egregious failure to apply basic best practices in the field of public health.
2. **They historicize the upstream causes of ACEs, negating the same pernicious present-day sources: systemic injustice and oppression.**[55,56,57] The decision not to acknowledge current systemic discriminatory institutions, practices, and policies driving ACEs and resultant health problems reveal other WSC and medical sanitizing practices—namely erasure, selective inclusion of fact, and skewed narratives against disadvantaged

groups, especially POC.[58] The persistence of the same sources of historical trauma present today—systemic injustice and oppression—are well-documented in the medical and public health literature and should be included in the pyramid. Their omission is a product of 'blind spots' in dominant epistemological and pedagogical frames in public health, which are both designed to and often result in perpetuating inequity.

3. **The language has been completely sanitized to avoid the 'uncomfortable' topics of systemic oppression and injustice.** "Generational embodiment" and "historical trauma" are *adjectival* labels that lack *nouns* naming the persons, places, things, or ideas causing harm and being harmed, as well as *verbs* naming the actions leading to these cascading conditions of dis-ease, poor public health, and pernicious biopsychosocial sequalae.

As Dr. Sará King explains, "We are talking about the science of social justice. Social justice is public health. They are inextricably linked."[59] Failing to name pervasive and persistent present-day structural oppression can be, and often is, taken to imply culpability on the part of the oppressed groups for the conditions, responses to ACEs, and resulting health ailments in the pyramid. More importantly, it leads to inappropriate analysis from a public health perspective, including failing to accurately identify the level where public health interventions are needed within the indigenous social-ecological model.

This demonstrates a pattern of ongoing medical sanitization—deliberate choices to exclude—established scientific fact, illustrating the WSC lens that is pervasive in the fields of medicine, public health, education, public policy, and many others. This is also reflective of an education system (both general and medical education) that teaches from a colonial gaze. The WSC/dominant paradigm choice to ignore obvious and voluminous findings about pervasive oppression and inequity underlying ACEs and trauma has led to an inappropriate and medically

unsound focus on the behaviors and health patterns at the individual and family levels, while ignoring the most significant drivers of these patterns at the organizational and macro levels. This also affects the way treatments are developed and delivered, as a medical colonial gaze is applied to POC individuals, families, and communities via implicit and explicit bias that holds individuals and families responsible for being the targets, victims, and survivors of pervasive structural inequity, discrimination, and oppression. This amounts to major blind spots that, when seen through hegemonic narratives in public health, appear to be gross negligence and unethical public health research and practice for at least the past 20-40 years of ACEs and trauma research.

In contrast, the AMA Health Study adopted a decolonizing lens and explicitly aimed to interrupt the WSC public health paradigm applied to most ACEs, trauma, and mindfulness research, which can be seen in the study design and implementation. For example, expanded ACEs were included, which operate at the community, institutional, and macro levels, including bullying, neighborhood insecurity, social exclusion/isolation, and discrimination. As a product of decades of academic training in elite institutions, the lead author has had to maintain vigilance and a reflexivity practice to notice when bias, privilege, and hegemonic narratives and practices arise in themselves and others, and how it may be redressed by adopting decolonizing lenses and behaviors. Other RESJB practices integral to the study are described throughout each chapter.

ACEs and Trauma in the US

Context

ACEs have been called "the gravest and most costly public health issue in the United States"[60] and are widespread: two-thirds of US adults have at least one ACE and nearly 40% have two or more.[61] ACEs and resulting trauma are linked to poor health outcomes, , and the risk

for negative outcomes increases with number and exposure.[62,63,64] Childhood adversities can shape the life course, be transmitted across generations, and have multilevel impacts on families, schools and institutions, communities, and societies.[65,66,67,68,69,70] ACEs and trauma are linked to increased health risk behaviors, health care utilization costs, morbidity, mortality, low life potential, and transmission of health and economic problems to offspring.[71,72,73,74] Thus, many initiatives have emerged to build trauma-informed communities and cities – "where people realize the prevalence of trauma, recognize the impact and responses to [it], and resist practices that could cause more harm".[75] Trauma-responsive programs are also increasingly being developed and implemented to address this important public health issue.

Reducing ACEs can produce significant health, social, and financial benefits, and cost savings. Drs. Felitti and Anda, the authors of the original ACE Study, "calculated that [the] overall costs [of ACEs] exceeded those of cancer or heart disease and that eradicating child abuse in America would reduce the overall rate of depression by more than half, alcoholism by two-thirds, and suicide, [intravenous] drug use, and domestic violence by three quarters. It would also have a dramatic effect on workplace performance and vastly decrease the need for incarceration."[76]

Definitions

ACEs do not have a single definition, but consist of abuse, neglect, and family or community challenges in childhood that increase the risk of poor health and wellbeing outcomes across the life course.[77,78] The original ACEs Study in 1995-1997 included seven ACEs falling into two categories: abuse (psychological, physical, sexual) and household dysfunction (substance abuse, mental illness, mother treated violently, criminal behavior).[79] From the time this study was designed and conducted (2017-2020), the CDC-Kaiser Permanente ACE Study

has had three ACEs categories: abuse, neglect, and household challenges. The 7 original ACEs were expanded to 10 to include emotional and physical neglect, and parental separation or divorce, all at the individual and family levels within the social-ecological model.[80]

The social-ecological model is an ancient multilevel indigenous and POC health and well-being framework from traditions including African American and Latinx;[81] the Lakota;[82] First Nations (native Canadians), Māori, Aboriginal Australians, Sámi;[83] and Native Hawaiian[84] traditions (often misattributed to Dr. Brofenbrenner, who first published on it in academic journals), which nests individuals within families, communities, institutions, and macro-level factors, such as policy, laws, culture, and land. As Dr. Quiñones Rosado explains about the millennia-old indigenous social-ecological Lakota Medicine Wheel: "…The Four Worlds' medicine wheel model presents a set of four interrelated circles, hoop or wholes, each one divided into four parts. These circles represent the person; the family or clan; the community; and the wider world."[85] Given the levels vary somewhat across sources, this study adopted a five-level model: individual, family, school/organizational, neighborhood/community, and macro/policy. A review of the literature reveals many variations of the 10 CDC-Kaiser ACEs, and many ACEs at all levels from individual to macro and land within the indigenous social-ecological model, which has impelled many scholars to call for expanded ACEs beyond the individual and family levels. (Shown in Table 2.2) Thus, the AMA Health Study included four ACEs at the school, community, and macro levels, in addition to the traditional 10 ACEs.

ACEs are common sources of trauma, which itself has multiple definitions. Resmaa Menakem, a leading trauma researcher, defines it as "a wordless story our body tells itself about what is safe and what is a threat." [86] Substance Abuse and Mental Health Services

Administration (SAMHSA) explains, "…Trauma results from an event, series of events, or set of circumstances that is experienced by an individual as physically or emotionally harmful

Table 2.2. ACEs by Level in the Indigenous Socioecological Model from Literature Review		
Socioecological Model Level	**ACE Category**	**Adverse Childhood Events** *CDC-Kaiser ACEs Study | ^National Survey of Children's Health (NSCH) | Additional sources indicated in endnotes
Individual	**Abuse**	• Psychological/emotional/verbal abuse*[87] • Physical abuse*[88] • Sexual abuse*[89]
	Neglect	• Emotional neglect*[90] • Physical neglect*[91] • Child welfare involvement[92] (also applies to abuse) • Experience with the foster care system[93]
Family / Household	**Unhealthy individual behaviors or conditions**	• Household alcohol abuse^[94] • Household substance abuse*^[95] • Household mental illness*[96] / mental health problems in the home^[97] • Criminal household member*[98] (Criminal behavior in household)[99]
	Lost or strained relationship with parent	• Parental separation or divorce*[100] • Prolonged absence of a parent[101,102] • Parent living outside home and/or owed child support[103] • Parental divorce^[104] • Loss of a parent to death or incarceration^[105] / Family involved with the legal system[106]
	Unhealthy interpersonal interactions	• Parents always arguing at home[107] / Frequent family conflict[108] • Mother treated violently*[109] • Domestic violence^[110]
	Economic challenges	• Serious economic hardship^[111] / Family financial problems[112] • (Low) socioeconomic status[113] • Parent lost job[114] • Food insecurity[115] • Homelessness[116]
School/Peer		• Peer rejection[117] • Peer victimization[118] / Bullying[119,120] • No good friends (social isolation proxy)[121]
Community/ Organizational		• Community violence exposure[122] / Witnessing or experiencing violence^[123] or violent crime[124] • High-poverty neighborhoods[125]
Macro/Policy		• Historical loss[126,127]

		• Perceived discrimination[128] / Racial discrimination[129]
Multi-level	*Family, peer, or community*	• Someone close had a bad illness or accident or died by these causes[130] • Property victimization (non-sibling)[131]

or life threatening and that [can have] lasting adverse effects on the individual's functioning and mental, physical, social, emotional, or spiritual well-being."[132] Alternate definitions define trauma more broadly as responses to past stress that disrupt health, well-being, and functioning in the present.[133] The broader biopsychosocial impacts of ACEs and trauma are explained below.

Mechanisms: Interpersonal Neurobiology and How ACEs and Trauma Influence Health, Well-being, and Life Outcomes[134]

To understand the mechanisms of ACEs and trauma on an individual, we must be aware of the context, including relationships and environment, from which they arise.

Interpersonal Neurobiology

ACEs and trauma can disrupt neurodevelopment, which impairs social, emotional, and cognitive functioning, and increases health-risk behaviors, sometimes referred to as a "trauma organized" lifestyle.[135] Resulting dysfunction and cumulative weathering on the body, or allostatic load, leads to disease, disability, social and financial problems, and early death.[136,137] These processes begin before conception (in from parents back through one's ancestral lineage) and continue across the life course.[138] ACEs and trauma are reflective of relational neuroscience or interpersonal neurobiology (IPNB), a term coined by Dr. Dan Siegel to refer to human development and functioning as being a product of the relationship between the body, mind, and relationships.[139] ACEs and trauma occur between an individual and some stimulus. Thus, ACEs and trauma are inherently relational, connecting the individual biology of a person to other people, beings, behaviors, and contextual factors. This also means that research on interventions

that seek to address ACEs, trauma, and mental health sequalae must consider the IPNB mechanisms both within and among individuals.

Cyclical Trauma

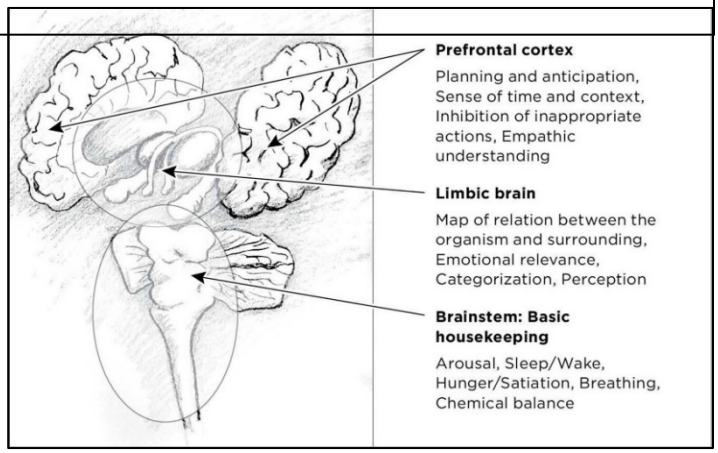
It is important to examine the multilevel dynamics of cyclical trauma. Given that "…more than half of the people who seek psychiatric care [for trauma] have been assaulted, abandoned, neglected, or even raped as children, or have witnessed violence in their families," ACEs/trauma and biopsychosocial health are evidently linked. These links and their cyclical propagation of trauma are a focus of this study. For example, IPNB helps to explain how stress hormones in traumatized people "spike quickly and disproportionately in response to mild stressful stimuli" and take longer to reset to normal levels, causing memory and attention problems, irritability, sleep disorders, and chronic health problems – all common health problems resulting from ACEs. People who are exposed to trauma and experience these symptoms are at greater risk to perform poorly at school and work, experience more disease or disability, and have challenges with emotional stability and maintaining relationships. These factors, in turn, are linked to financial challenges, housing instability, and unhealthy coping mechanisms including substance use, unhealthy eating patterns, and risky sex behavior. These sequalae cyclically reproduce conditions for intergenerational ACEs, including concentrated poverty, ill health, involvement with the prison industrial complex, child maltreatment, and conditions used to legitimate substandard intervention and neglect by public officials.

The Human Nervous System

While additional research specifying the processes by which ACEs lead to trauma and poor health outcomes is needed, trauma research contains an extensive and growing understanding of mechanisms by which ACEs lead to negative health and life outcomes

developed over the past 40-50 years. ACEs and mental health crises often cause high levels of stress and nervous system dysregulation. Thus, the innerworkings of the human nervous system response (HNSR) are essential to understanding the biopsychosocial impacts of ACEs and trauma, as well as the impacts mindfulness (or other) interventions may have on it. The human stress response system is designed to respond to temporary threats. Prolonged exposure to perceived stress can be deleterious and is linked to allostatic load, the cumulative weathering of the body and cascading health problems.

Figure 2.5. The Triune (Three-part) Brain

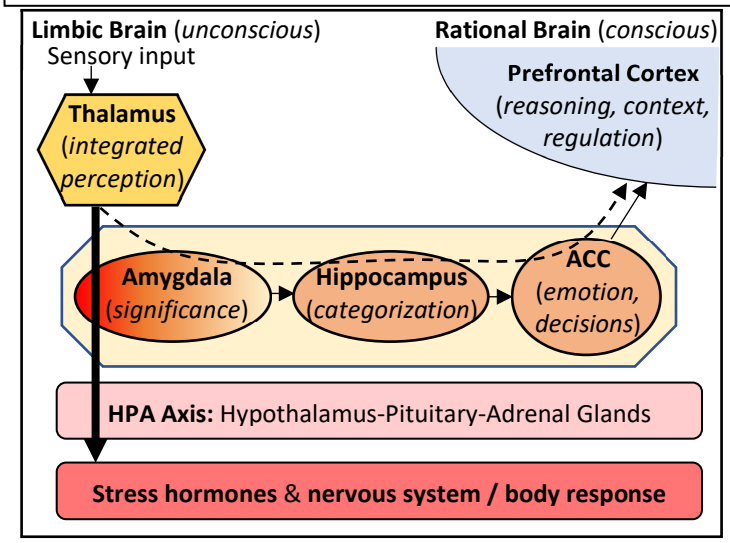


The Triune (three-part) Brain, shown in Figure 2.5, has developed and evolved from the bottom up in the human species. The brainstem or "reptilian" brain is responsible for sustaining life through sleep, hunger, breathing, etc. The limbic part of the "mammalian" brain is patterned in early childhood to map relationships, interprets and categorizes perception, and can be developed or changed over the life course. The prefrontal cortex (PFC), also known as the rational or "human" brain, houses executive functions: reasoning, judgement, contextual understanding, decision-making, and inhibition or self-regulation.

Dysregulation that is linked to poor mental health and wellbeing often begins in the limbic system, especially in those with ACEs and trauma exposure. This process is depicted in Figure 2.6. The limbic system is shown in warmer colors (yellow, orange, and red) to indicate how the mind-body experiences increasing alarm, and the rational brain is shown in blue to

indicate how emotional 'cooling' or de-escalation can occur in the PFC. While the diagram simplifies complex processes, outlining basic biopsychosocial mechanisms underlying (un)healthy stress response is vital to understanding and critically evaluating relevant scientific literature and the AMA Health Study findings. As shown above, sensory input—via the senses, proprioception, and enteroception—is processed in the thalamus, which integrates perception into an understanding of what we experience (i.e., knowing "what is happening to me"). This is passed to the amygdala, an unconscious part of the limbic brain that senses threat and determines emotional significance (*indicated in Fig. 2.6 by colors from red for alarm to light yellow for neutral significance*).

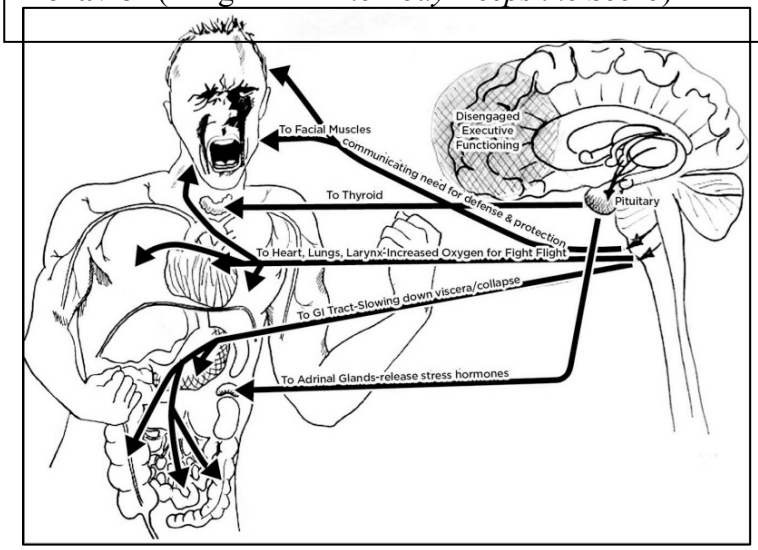
Figure 2.6. A Trauma-informed Model of the HNSR
(*Modified from an image by Dr. Van der Kolk*)



Signals from the thalamus are sent along two neural pathways. If the amygdala perceives danger, the faster path (*indicated in Fig. 2 by the vertical bold black arrow at left*) stress hormones like cortisol and adrenaline are released through the hypothalamus-pituitary-adrenal (HPA)-axis and the autonomic nervous system (ANS) is recruited, preparing the body for immediate response. Sensory input is also sent along a second slower neural pathway from the thalamus to the PFC through the hippocampus and anterior cingulate cortex (ACC), to make more refined interpretations of our perceptions. As Dr. Van der Kolk explains, "…Trauma increases the risk of misinterpreting whether a particular situation is dangerous or safe. …Faulty alarm systems lead to block ups or shutdowns in response to innocuous comments or facial

expressions." Consistent misinterpretation or having a hypersensitive HSRS leaves stress hormones elevated, increasing heart rate, blood pressure, inflammation; can impact the thyroid and GI tract, and lead to disengaged executive function—linked to poorer health and higher likelihood of adopting unhealthy coping behaviors (See Figure 2.7). Over time, this can deteriorate mental, emotional, physical, and social health.

Figure 2.7. Impacts of Trauma on the Brain, Body, and Behavior (Image from *The Body Keeps the Score*)



Top-down and bottom-up regulation are key facets of trauma responses that can help to understand how programs that address ACEs and trauma may have biopsychosocial impacts. Bottom-up regulation involves recalibrating the ANS to prevent the amygdala from catalyzing as many false alarms, cascading reactions, and related health problems. Top-down regulation involves strengthening the capacity of the frontal lobes, including the medial prefrontal cortex (MPFC), to assess sensations and determine if perceived threats are a false alarm, restoring balance, or merit a full response. While both have their merits, bottom-up regulation is particularly valuable in preventing initiation of detrimental domino effects from trauma.

Epidemiology: Prevalence and Trends

Two-thirds of US adults report at least one ACE: over one in four have experienced physical abuse (28.3%), one in five sexual abuse (20.7%), and one in ten emotional abuse (10.6%). 10-15% have been emotionally and physically neglected. Many have experienced

household challenges, such as parental separation or divorce (23.3%), witnessing violence toward their mother (12.7%), or a family member's substance abuse (26.9%), mental illness (19.4%), or incarceration (4.7%).[140] National Survey of Child and Adolescent Well-Being (NSCAW) data reveal even higher ACEs prevalence. 95% of children from birth to age six experienced at least one ACE: 8.42% had only one, 17.23% had two, and about 60% had three or more.[141] Of these, 74% experienced physical abuse, 80% psychological abuse, and 30% neglect.[142]

ACEs, Disparities, and Social Justice: Gender, Sexual Orientation, Race, and SES

Certain subgroups have disproportionately high ACE scores and exposure, which reflects pervasive systemic inequities and injustices. ACEs are more prevalent among people of low SES (e.g., low income, parent education, occupational prestige, etc.)[143,144] and racial/ethnic minorities.[145,146,147,148,149] Gjelsvik et al. found higher levels of ACEs in black adults compared to whites, which was partially attributed to low SES.[150] Some studies show an interplay between the association of ACEs, race, and income,[151,152] while many others reveal greater ACEs incidence among certain racial groups even after controlling for SES. Though ACEs prevalence is generally higher among minorities, whites are sometimes at greater risk for certain ACEs. One study found that Hispanics and whites with an incarcerated parent had a greater risk of smoking and multiple risk behaviors versus blacks, while Hispanics had a greater risk of heavy drinking compared to whites and blacks.[153] A study by Shilling et al. found higher mental health detriments from ACEs on whites versus blacks and Hispanics.[154]

ACE prevalence and impacts also vary by gender identity and sexual orientation.[155,156,157] More males report one or two ACEs, while more females report three or more ACEs.[158] Studies have shown males engage in more antisocial behaviors than females in response to ACEs[159],

while females with a history of early trauma have higher HPA-axis response (measured as overall corticotropin-releasing hormone) when responding to stressful situations[160] and greater risk of heart disease[161]. Finally, studies have shown people of lesbian, gay, bisexual, transgender, and queer (LGBTQ) sexual orientation experience more ACEs than heterosexuals and cisgender. This includes higher rates of psychological[162] and emotional abuse (47.5% vs. 10.6%);[163] physical abuse, sexual abuse, and IPV exposure at the individual level; and historical trauma at the macro level.[164]

Etiology and Risk Factors

Risk factors associated with ACEs are multilevel – from proximal individual- and family-level factors to more distal factors at the school, community, and macro levels – and often have complex interactions. Many risk factors are associated with, but not causally linked to, ACEs.[165] The most salient risk factors are outlined below according to levels in the socioecological model.[166,167] Also of note, at least one ACE is arguably erroneously included as an ACE, when it is often an antecedent to ACEs/trauma, rather than an ACE outcome itself. Physical neglect, defined as lacking adequate shelter, food, or clothing, increases the likelihood of experiencing ACEs, but is very often a proxy for low SES, and is therefore an exposure or risk factor, rather than an outcome or ACE. (However, physical neglect would be an ACE outcome when poverty/low SES is not a factor, but a child is still not having their basic physical needs met.)

At the individual level, ethnicity, low-income (≤150% below the established poverty line), hyperactivity or antisocial behavior, and poor physical health (e.g., special needs, disabled, chronic illness, wasting, developmental disabilities)[168,169,170] are associated with higher ACE scores.[171]. Child maltreatment is also highest during adolescence (and infancy, particularly for premature and low birthweight infants) because these ages correspond to stages of development

parents often find challenging.[172,173,174,175,176,177] Children in poor physical health or with behavioral problems are also often more difficult to care for, and thus at increased risk of abuse. ACE prevalence also differs by gender, education, and employment characteristics. Having one or two ACEs is more common in males, while over two ACEs and sexual abuse are more common in females.[178,179,180,181] Youths not attending school, working over eight hours per day, and having more than two jobs also have more ACEs.[182]

Family-level risk markers for ACEs include household, parental, and parent-child characteristics. Household characteristics linked to ACE risk are limited household space,[183] interpersonal violence (IPV)[184], and certain family structures, such as large families, non-nuclear and single-parent households, separated parents, and living with a step-parent or other unrelated adults.[185,186,187,188] Parental characteristics associated with ACE risk include young and old parent age, race/ethnicity, low SES (such as low income and educational attainment), low work status or unemployment, late or limited prenatal care, low self-esteem, poor impulse control/coping, maternal criminal history, and low satisfaction with social support.[189,190,191,192,193,194,195,196,197] Finally, parent-child dynamics correlated with ACE risk include parental punitiveness and low parent-child closeness, which includes disinterest, fewer positive interactions, low responsiveness, less positive affection, and rejection.[198,199]

School-level risk markers for ACEs include bullying, peer victimization, peer isolation/rejection, and knowing peers who have been assaulted or had sex with a teacher.[200,201,202,203,204] Some peer/school-level factors play a protective role. For example, the relationship between adversities and poor school outcomes are reduced by peer intimacy and companionship but worsened by peer conflict.[205]

Risk markers for ACEs at the community/organizational level include neighborhood disadvantage, unsafety, and low social capital, such as low involvement and low quality social networks.[206,207,208,209] Semi-urban and rural locations are also associated with higher average ACE score, compared to urban centers, which has been attributed to areas of economic and social disadvantage.[210,211] These risk markers are linked to higher risk of community-level ACEs, such as experiencing discrimination and witnessing community violence.[212] The presence of robust organizations can also play a protective role by offering important services to the community, e.g., youth and family programs, skills training, safe spaces, positive youth-adult relationships and mentors, and healthy social opportunities with supervision.

At the community-level there is also an interplay between ACEs, race, and income. Minority and low-SES children living in family and community contexts of high poverty, health risk behaviors, and negative environmental influences also are at greater risk for maltreatment.[213,214] However, while minority children are more likely to be reported to child welfare, when social context is considered, racial disparities in maltreatment decrease. This indicates that social context may be a more significant factor in predicting ACEs, and race may be acting as a proxy for the contexts of disadvantaged neighborhoods.[215]

Macro-level factors, including state and federal policies, programs, and systems also affect how ACEs are detected, investigated, and handled systematically. Child welfare, foster care, judicial systems, and health care systems each play a role in how ACEs are detected, reported, and redressed. One study found that doctors sometimes lacked knowledge about, or were not aware of the importance of, certain risk markers such as prematurity and psychological/emotional factors on likelihood of child abuse. The same study found physicians often did not report abuse for fear of breaking up families or leading to even greater harm to a

child, having had negative experiences with social or judicial services, and lacking knowledge of reporting procedures.[216]

Additionally, ACEs and trauma disproportionately impact certain groups – such as particular ethnic, gender identity, or SES groups – due to macro-level systems of inequity that impact social, environmental, and structural factors. For example, as Hwahng and Nuttbrock explain, "[Bisexual] men were experiencing disproportionately burdensome stressors not only from their own lifetime victimization experiences but also because of the greater extent to which they were affected by the intergenerational transmission of historical trauma through their memory/experience of said trauma. …[This] may manifest in family dynamics, such as targeted abuse of children who are gender-atypical and/or sexual minority. Thus, gender and sexual minority-related victimization by family members may be related to larger structural factors and may be a form of historical trauma transmission." Consequently, macro and structural-level factors, their interplay with health-deteriorating factors at other socioecological levels, and their differential impacts on certain subgroups (such as marginalized and minority communities) are important to consider in ACEs/trauma research.

Consequences: Public Health Impact and Social Costs of ACEs

The detriments of ACEs are vast, costly, and underreported. ACEs are linked to increased health problems including health risk behaviors, morbidity, mortality, and health care costs, and transmission of health and economic problems across generations.[217,218,219,220,221] Societal impacts of ACEs include lower "educational achievement, economic productivity, responsible citizenship, and lifelong health".[222] A detailed list of the health and social problems associated with ACEs are detailed in Table 2.3 below.

Table 2.3 Health/Well-being Problems Associated with ACEs
(*Note: All health risk categories or individual risks with * cited on CDC ACE website*[223])

Health Domain	Specific Health Risks That Increase with ACEs	
Mental / Emotional	• Attention problems, attention deficit/hyperactivity disorder (ADHD) • Anxiety[224] • Cognitive impairment[225] • Depression*[226] • Emotional problems[227] • Hope[228]	• Loneliness[229] • Low impulse control, anger[230] • Memory problems[231] • Mental health disorders[232] • Numbness, nonreactivity[233] • Post-traumatic stress disorder (PTSD)[234] • Suicidality, suicide attempts*[235]
Physical	**Physical ailments and quality of life** • Allostatic load, chronic conditions*[236] • Early puberty[237] • Health-related quality of life* • Heart disease, high blood pressure*[238] • Inflammation[239,240] • Liver disease* • Lung disease, chronic obstructive pulmonary disease (COPD)*	• Sleep disorders[241,242] **Nutrition and weight** • Increased appetite[243] • Obesity[244, 245,246] • Underweight[247, 248] **Harm to offspring: Genes and epigenetics** • Alcohol use during pregnancy[249] • Fetal death* • Intergenerational[250] transmission[251,252]
Behavioral	**Substance Use*,**[253] • Tobacco use and dependence[254] • Early smoking initiation • Alcoholism and alcohol abuse • Illicit drug use **Nutrition and weight**[255] • Unhealthy food intake (too much/little)[256] • Excessive exercising for unhealthy weight control (linked to witnessing domestic violence)	**Intimate and sexual relationships*** • Early initiation of sexual activity • Multiple sexual partners • Sexually transmitted disease[257] • Adolescent pregnancy • Risk for intimate partner violence • Risk for sexual violence **Other problem behaviors** • Criminal behavior[258]
Personal, Social & Financial Challenges	**Personal and social** • Social problems[259] • Violence victimization[260] • Lower life satisfaction[261] **Daily functioning: work and school** • Poor work performance[262] • Occupation prestige[263] • Poor academic achievement[264] / Below average grades[265] • Low educational attainment[266]	**Relationships** • Insecure attachment[267] • Cohabitation (vs. marriage)[268] • Divorce[269] **Financial**[270] • Financial stress • Unemployment **Health care**[271] • Lower access to health services[272] • Increased health care utilization[273] • Higher health care costs[274]

Additionally, there is a graded dose-response relationship between ACEs and poor health outcomes: as the number of ACEs increases, the number and severity of negative health outcomes also increases.[275] Each additional ACE increases the likelihood of mental and physical

health problems, health risk behaviors, and personal, social, and financial challenges.[276,277,278,279,280,281,282,283] For example, Felitti, et al.'s original ACE study found that people with 4 or more ACEs, compared to those with a score of zero "had 4-to 12-fold increased health risks for alcoholism, drug abuse, depression, and suicide attempt; a 2- to 4-fold increase in smoking, poor self-rated health, ≥50 sexual intercourse partners, and sexually transmitted disease; and a 1.4- to 1.6-fold increase in physical inactivity and severe obesity."[284]

Overview of Approaches to Address ACEs and Trauma

As summarized below, mindfulness-based interventions (MBIs)—a set of practices and a way of being aware of the unfolding present moment with open curiosity or nonjudgment[285,286]—are the most effective way to address ACEs, trauma, and mental health issues. However, talk therapy and pharmaceutical drugs are most often used, despite their comparative lack of effectiveness, lower accessibility and affordability, and negative side effects. A leading question in the field is: Why are MBIs not the standard treatment? Applying an RESJB lens, explanatory factors include hegemonic narratives and practices that relegate therapies labelled as "holistic/integrative", "alternative", or "complementary"; health insurance and pharmaceutical companies that prioritize the financial bottom line (e.g., it is more profitable for a person to be in therapy for years rather than be given tools that are accessible, affordable, and that they self-administer); and status quo practices in medicine and public health.

Surveying the landscape of approaches to addressing ACEs and trauma

It is important to understand the landscape of interventions to address ACEs and trauma, to understand where MBIs fit and to provide context to assess the comparative effectiveness of PINS. MBIs are considered a form of complementary and alternative medicine (CAM) and can be targeted to one or more levels within the indigenous social-ecological frame. A survey of

leading approaches to address ACEs/trauma compared to MBIs is provided below, arranged by level. Ongoing examination of MBIs like PINS in comparison to other leading therapies are critical because if they are found to be equally or more effective and to have fewer costs and negative side effects, they should supplant status quo treatments.

Individual Level – Standard approaches to redressing ACEs and trauma typically occur at the individual or family level and typically fall into three categories: 1) talk therapy—such as cognitive behavioral therapy (CBT); 2) dialectic behavioral therapy (DBT), etc.—pharmaceutical drugs; and 3) other CAMs like neurofeedback and yoga.[287] Nine of the most common individual-level trauma interventions are briefly described and compared to MBIs (*in italicized text*) below.

Talk Therapy

1. CBT is comprised of cognitive and behavioral techniques that help people think about things in new and different ways and build skills to apply new patterns of thought and behavior.[288, 289] *MBIs can also shape cognitive and behavioral outcomes.*
2. DBT is a type of CBT that focuses on changing negative patterns of thinking and behavior, and has been shown to be effective in treating suicidality, depression, substance use, and other health problems.[290, 291] It consists of modules including individual psychotherapy, group skill training, and telephone coaching that are delivered by a therapist consultation team.[292] *MBIs also seek to shift patterns of thinking and behavior, and are linked to improvements in similar areas of mental health as DBT.*
3. EDMR is a psychotherapy approach used to treat trauma and ACEs that helps to "rapidly treat unprocessed memories", but, unlike CBT and DBT, it does not require "a) detailed descriptions of the event, b) direct challenging of beliefs, c) extended exposure, or d) homework".[293,294] EMDR is often combined with CBT and DBT, but can be a stand-

alone modality that may reduce re-traumatization and be more affordable. *MBIs can also help to treat unprocessed (often traumatic) memories (e.g., PINS lesson on "How We Survived Our Lives"; see below) with the same benefits of EMDR, and fewer costs and equipment.*

CBT, DBT, and EMDR are based on the adaptive information processing (AIP) model, which holds that mental health problems stem from unprocessed memories.[295] CBT and DBT are usually offered weekly for several weeks to several months (or years), and entail practicing new skills between treatment sessions. EMDR is effective over a shorter period of a few weekly sessions.[296]

4. Other types of talk therapy include prolonged exposure, psychodynamic therapy, emotion regulation, psychoeducation, trauma recovery and empowerment model, and feminist therapy.[297] An exhaustive review of all therapies is beyond the scope of this study. *MBIs also seek to address emotion regulation and trauma, and, at best, empower people to take control of their individual and collective health and well-being.*
5. Expressive writing is a form of written 'talk therapy' that entails disclosing details about traumatic events and has also successfully been used to treat trauma. While the underlying mechanisms are not fully understood, it is believed to interrupt the cycle of nondisclosure, autonomic arousal, and psychological distress.[298,299] *MBIs also often seek to interrupt the same biopsychosocial cycles, and may include expressive writing as PINS does with journaling practices.*

Pharmaceutical drugs typically include benzodiazepines and antidepressants. However, the World Health Organization (WHO) recommends not treating youth with acute traumatic stress symptoms (nor adults for at least a month following the onset of trauma symptoms).[300]

Furthermore, there is no consensus about its effectiveness as a trauma treatment, yet their prescription in treating mental health sequalae linked to trauma is pervasive.[301] *In contrast, MBIs are more affordable, have fewer potential negative side effects, and do not have the potential to develop problematic chemical dependency.* Additional detail is provided below.

CAM

Integrative or holistic trauma/ACEs treatment approaches are comparatively cost effective and aligned with the WHO's recommendation to provide relaxation and psychoeducation to youth with trauma symptoms, rather than using pharmaceuticals.[302] These include:

6. Neurofeedback is a powerful, but relatively expensive, treatment that uses an electroencephalogram (EEG), electrodes attached to the scalp, and computer-generated feedback to monitor brain waves and inform a person when they produce alpha waves (associated with relaxation). People can learn through feedback when in an alpha state and can be trained to enter this state with sound cues. Improved PTSD scores, interpersonal comfort, emotional balance, self-awareness, anxiety, sleep, calmness, and focus have been observed.[303] *This approach is not typically used in MBIs, but there is some cutting edge research being done in the area.*
7. Yoga is a series of ancient Indian practices and ways of being that comprise an eight-fold path that have been in existence for at least 5,000 years orally and 2,000 years in writing in *The Bhagavad-Gita* and *The Yoga Sutras of Patanjali*. The 8 steps on the path are: 1) ethical standards (*yamas*), 2) self-discipline and personal observances (*niyamas*), 3) postures (*asanas*), 4) breath control and practices (*pranayama*), 5) withdrawal of the senses (*pratyahara*), 6) concentration (*dharana*) or focusing the mind/attention on a

specific object, sound, energy center in the body, etcetera, 7) meditation (*dhyana*), the uninterrupted flow of concentration or deep state of awareness without a specific object of focus, and 8) a state of enlightenment, bliss, or ecstasy (*samadhi*) in which one transcends the self and realizes a profound interconnection with everything in existence.[304,305,306] Samadhi roughly translates as "putting together" or integration of the physical, mental, emotional, and/or spiritual aspects of one's being. Most Western yoga practices emphasize breathing, postures, and meditation. Yoga as ACEs/trauma therapy has been shown to increase activation of the insula and prefrontal cortex, brain structures responsible for self-regulation.[307] *Yoga, and mindfulness meditation and movement practices derived from these ancient practices, are easily accessible, have few side effects, and are often incorporated into MBIs, including PINS.*

8. Mindfulness interventions while derived mostly from longstanding Buddhist monastic practices, are also informed and mirrored by other traditions including Hinduism, Taoism, Islam, and various indigenous traditions worldwide.[308,309,310,311,312] These teachings were popularized in the West by philosophers and mindfulness practitioners including Paramahansa Yogananda[313], Alan Watts[314], Jon Kabat-Zinn[315], Thich Nhat Hahn[316,317], and others in the 1970s through the 21st century.[318,319] Well-known MBIs include mindfulness-based stress reduction (MBSR) and mindfulness-based cognitive therapy (MBCT). MBIs have been shown to improve cortisol secretion, inflammatory and immune function, brain structure and function, and reduce anxiety, depression, PTSD, emotion suppression, and rumination.[320,321]
9. Internal family systems therapy (IFS) is an approach that treats the mind as having diverse, interrelated parts or members, like a family, with "different levels of maturity,

excitability, wisdom, and pain".[322] IFS fosters mindful self-leadership, self-awareness, self-compassion, and self-care to get the protective and other parts of the self to work together harmoniously.

Family-level approaches—such as internal family systems therapy, early childhood interventions, and home visiting programs, and parenting and family support systems—aim to reduce ACEs and their sequalae by shifting parenting beliefs and behaviors linked to abuse and neglect, and are often implemented with high-risk, low-SES families.[323,324] The Triple P – Positive Parenting Program is an example of the comprehensive parenting and family support that aims to prevent and reduce children maltreatment by increasing parenting competence and reduce dysfunctional parenting practices.[325]

School/peer-based approaches have increasingly sought to redress ACEs and incorporate trauma-informed content, including evidenced-based programs designed for implementation in schools that often include mindfulness, group therapy, and/or psychoeducation components.[326,327] School-based approaches have the benefits of unparalleled reach and staff who are often well attuned to local community needs.[328] Examples include a randomized control trial (RCT) of an adapted MBSR program in a low-income, mostly minority public middle school in the city of Baltimore that found significant reductions in somatization, depression, negative affect, negative coping, rumination, self-hostility, and posttraumatic symptom severity in the intervention group compared to the control group.[329] Similar results – reduced anxiety, improved coping and psychological functioning, and static cortisol levels (versus elevated cortisol in controls) – were seen in an urban male cohort in a small RCT.[330]

A third example is the RAP Club, a 12-session evidence-based, trauma-informed intervention to improve emotion regulation and effective decision-making, which draws from

CBT, DBT, school-based trauma/grief group psychotherapy, and mindfulness. This program, led by a young adult community member and mental health counselor, resulted in improved teacher-rated emotion regulation, social and academic competence, and authority acceptance in two urban middle schools in disadvantaged communities versus the control group. These results, as well as improved teacher-rated disciplinary sanctions for misbehavior, also held for youth with low baseline depression scores.[331]

Community-based approaches like Healthy Steps, Accountable Health Communities (AHC; see Macro-level approaches below), and Trauma-informed Communities (TICs) aim to ensure low-SES and high -risk parents are given supports, including parenting education and training to prevent abuse and neglect.[332] Integrating ACEs into hospital community benefits standards and community needs assessment efforts have also been suggested.[333]

Healthy Steps is an intervention that has shown to improve children's health and parenting practices, although clinicians confronted reimbursement and time barriers in low-income areas.[334,335,336,337] AHC is a "universal, comprehensive screening [model] for health-related social needs – including but not limited to housing needs (e.g., homelessness, poor housing quality, inability to pay mortgage or rent), food insecurity, utility needs (e.g., difficulty paying utility bills), interpersonal safety (e.g., problems of intimate-partner violence, elder abuse, child maltreatment), and transportation difficulties — in all Medicare and Medicaid beneficiaries who obtain health care at participating clinical sites."[338] The program uses a tiered approach tied to payments to address the drivers of health problems.

SAMSHA has defined six principles of a city or community-level trauma-informed approach, which are being applied in AHCs and TICs:[339]

- Safety – Prevents violence across the lifespan and creates safe physical environments

- Trustworthiness – Fosters positive relationships among all residents, City Hall, police, schools, and others
- Empowerment – Ensures opportunities for growth are available for all
- Collaboration – Promotes involvement of residents and partnership among agencies
- Peer Support – Engages residents to work together on issues of common concern
- History, Gender, and Culture – Values and supports history, culture, and diversity

Trauma-informed communities and cities include Philadelphia, Pennsylvania; San Francisco, California; Walla Walla, Washington; Kansas City, Missouri; Worcester, Massachusetts; and Tarpon Springs, Florida.[340] Portland, Oregon, where PINS operates, is not a "trauma-informed city" because it falls under a statewide trauma-informed initiative, Trauma Informed Oregon (TIO), which was formed in 2014.

TIO is "a statewide collaborative aimed at preventing and ameliorating the impact of adverse experiences on children, adults and families… [that] works in partnership to promote and sustain trauma informed policies and practices across physical, mental, and behavioral health systems and to disseminate promising strategies to support wellness and resilience." This collaborative includes the Oregon Health Authority's Health Systems Division and partner organizations including Portland State University, Oregon Health & Science University, and the Oregon Pediatric Society. TIO offers a central repository of information and resources, training and workforce development, systems-change efforts, and support for community-based healthcare that apply trauma-informed policies and practices.[341] Since the formation of TIO, Oregon Governor Kate Brown signed a landmark trauma-informed education bill (H.B. 4002) in 2016 to develop a statewide plan to introduce trauma-informed approaches in schools to address "chronic absences of students" due to trauma-related causes.[342]

Macro-level approaches include policies, systems, and funding channels employed to tackle the issue of child abuse and neglect, especially maternal, child, youth, and family programs. Many community-level TIC approaches are, or if scaled up could be, macro-level changes because they involve legislative, policy, systems, and/or funding changes. Additional examples include Title V Maternal and Child Health Block Grants, Title IV child welfare programs, Head Start, Healthy Start, and school health/wellness programs.[343] The ACH program described above is also an approach that combines Medicaid and Medicare policy changes, systems development, and funding to address the underlying causes of child abuse, neglect, and household dysfunction.

Other macro-level approaches include trauma-informed school systems, medical education and training for doctors and other health professionals on preventing and reporting abuse and neglect, and improved educational and media campaigns.[344] Collectively, these macro-level policy and system changes might catalyze longer-term culture changes. For example, an illustrative article by Bethell et al. outlines four agenda priorities to address ACEs and promote child well-being in health services, which might guide macro-level approaches: 1) translate the science of ACEs, resilience and nurturing relationships; 2) cultivate the conditions for cross-sector collaboration; 3) fuel "launch and learn" research, policy and practice innovation, implementation and learning; 4) restore and reward relationships and self, family and community self-care, prevention, and healing.[345]

MBIs

MBIs were chosen as a as a focus for this study because they are believed by many experts to be the best available treatment for ACEs/trauma. Within the landscape of multilevel interventions to address the ACEs/trauma/mental health syndemics, MBIs have been shown to be

more accessible, affordable, adaptive to diverse needs, and cause fewer potential side effects, as described below. Additionally, PINS program documents and field notes, such as videos of youth talking about the program, describe the program as life-altering, helping youth with everything from reduced anxiety, to anger management, to even leading youth not to commit suicide.[346] This particular MBI appeared to be having extensive positive benefits for very diverse students affected by trauma or struggling with mental health issues prior to the AMA Health Study.

Definitions and Types

Mindfulness is being aware in the present moment, non-judgmentally. MBIs do not have a single definition or goal but can be understood as an area of "mind-body medicine [that] focuses on: the interactions among the brain, the rest of the body, the mind, and behavior[; and] the ways in which emotional, mental, social, spiritual, experiential, and behavioral factors can directly affect health".[347] MBIs use activities – such as, meditation, yoga, breathing exercises, practicing compassion toward self and others, and recognizing and changing self-talk – "to develop the state, or skill, of mindfulness".[348]

While there is no single classification scheme for MBIs, they can be grouped into five categories, as seen in Table 2.4.[349] Focused attention (FA) is concentration training using an object of focus. Open monitoring (OM) is mindfulness training, in which one is aware to the present moment without judgement or reactivity, and without an object of focus. Automatic self-transcending (AST) is relaxing the body and simultaneously letting mental activity subside to

reach a state of calmness, yet alertness. Mind-body (M-B) and body-mind (B-M) MBIs use mind- and body-centered techniques, respectively, to relax the body, focus and train physiological responses, and calm oneself; these may overlap with FA, OM, or AST. Table 2.4 is not exhaustive but provides a compendium of many MBI types.

Table 2.4. Mindfulness-Based Intervention Typology
(Modified version of table by Simkin, et al.)

MBI Type and Definition	Specific Approaches
Focused attention (FA) Concentration training, uses a specific object of focus	Mindfulness-based stress reduction (MBSR) Mindfulness-based cognitive therapy (MBCT) Dialectical behavior therapy (DBT) Acceptance and commitment therapy (ACT) Mindfulness-based relapse prevention (MBRP) Mindfulness-based substance abuse treatment (MBSAT)
Open monitoring (OM) Mindfulness training, being aware to the present moment without reactivity or an object of focus	Sahaja meditation (SM) Sahaja Samadhi meditation (SSM) Sahaja yoga meditation (SYM)
Automatic self-transcending (AST) Effortlessly relaxing the body / reducing physiologic arousal AND letting mental activity subside, achieving "deep calmness while alert"	Transcendental meditation (TM)
Mind-body (M-B) Use of mind-centered techniques to relax the body and (re)train physiologic responses	Meditation-relaxation (MED-RELAX) Progressive muscle relaxation (PMR) Deep breathing meditation (DBM) Posture, breathing, attention, visualization Electromyographic (EMG) biofeedback
Body-mind (B-M) Use of the body-centered techniques to achieve mental and physiologic focusing and calming	Exercise Yoga Qi Gong Tai Chi Movement therapy or dance therapy Other mindful movement activities

Benefits: Health, Well-being, and Connectedness

Given that MBIs have been linked to improvements in adolescent physical, mental, socioemotional, and behavioral health processes and outcomes, they may help reduce the adverse effects of ACEs and trauma.[350,351,352] MBIs have been shown to enhance protective factors at multiple levels within the socioecological model,[353] including resilience, cognition, impulse control, parental stress management, parent-child engagement, and more.[354] This may reduce the disproportionately high rates of emotional, mental, or behavioral (EMB) conditions among children with ACEs.[355] MBIs may have the capacity to help youth build resiliency in response to ACEs by buffering against negative health outcomes.[356,357,358] MBIs may also help youth achieve

central developmental goals, such as emotional and physical safety, engagement with learning, positive sense of self/self-efficacy, and the acquisition of life/decision-making skills.[359] (See conceptual framework below.) Furthermore, some studies have shown that the increase in self-compassion cultivated through MBIs reduces perceived stress, rumination, depressive symptoms, and negative affect while increasing positive affect and life satisfaction.[360]

A plethora of studies have shown that meditation and MBIs cause measurable changes in brain structure and activity, registered with EEG and fMRI scans, and the HSRS. For example, Holzel et al. found that with an average of 27 minutes per day, grey matter concentration increased in the posterior cingulate cortex, the temporo-parietal junction, and the cerebellum of a group who completed MBSR training compared to controls, brain areas associated with learning and memory processes, emotion regulation, self-referential processing, and perspective taking.[361] A meta-analysis by Pascoe et al. has also found that mindfulness is associated with reduced physiological markers of stress, including systolic blood pressure, cortisol, heart rate, C-reactive protein, triglycerides and tumor necrosis factor-alpha in diverse populations.[362]

MBIs, ACEs, and Adolescence: Promotion and Prevention

Adolescence

Adolescence is a sensitive period spanning age 10 to 24 when tremendous cognitive, physical, and socioemotional development take place. Hormonal maturation and physical growth occur, and social and life skills are gained, influencing identity, self-esteem, coping mechanisms, and relationships.[363] Neurological changes, such as myelination and pruning, refine pathways in the brain. Pruning reduces the number of connections, eliminating those less used and reinforcing those used. Myelination sheaths neural connections, fostering faster synchronized

information flow. Brain integration results, enhancing linkages and coordination. These processes are also influenced by genetics, experience, and stress.[364]

While adolescence is a period characterized by "the most power for courage and creativity",[365] adolescents are also susceptible to the detriments of ACEs: "…Adversities trigger neurobiological disruptions that can become embedded as biological traces within interconnected chains of response and development… ACEs function as part of this patterning, arising during developmentally sensitive periods in the life course with the risk of catalyzing chains or linked pathways of disadvantage."[366]

Brain and behavior can be shaped to enhance or diminish resilience and supportive relationships, which can help adolescents generally, and those with ACEs in particular. MBIs may be particularly effective during adolescence, a critical period when rapid cognitive, physical, and socioemotional development occurs.[367,368] Intervening with MBIs in adolescence can strengthen neural pathways that shape identity, regulate emotions, develop coping skills, and form healthy relationships with oneself and others. For example, the incomplete development of the prefrontal cortex in adolescence means that executive functions, such as reasoning and regulating responses when emotions are heightened, are limited in 'hot cognition' or heat-of-the-moment situations. Learning and practicing behaviors to regulate the mind, emotions, and reactivity can help strengthen neural pathways linked to safer and healthier patterns of behavior in response to stress.

Prevention of ACEs in Adolescence

Given the known impacts of adversity and trauma on development and pathways to healing and health, prevention and intervention are critical and may be particularly effective during pivotal periods like adolescence.[369,370] Preventive interventions that address risk factors

common to multiple problem behaviors may be "an efficient approach" to preventing numerous problems downstream by addressing risk factors upstream.[371,372] As outlined in Table 2.1 below (from Oral et al.'s work), primary, secondary and tertiary ACEs prevention interventions have unique goals, but all aim to improve health and functioning across multiple levels of the socioecological model and across the life span.[373] Prevention can also be categorized as universal, selective, or indicated. Universal interventions target the general population to prevent

Table 2.1. Primary, Secondary, and Tertiary Prevention Goals and Responses to ACEs

Phase	Goal	Examples
Primary prevention	Prevent the occurrence of adverse childhood events so that fewer children experience ACEs	• Programs that prevent child abuse and neglect • Programs that increase family and community stability and resilience • Programs that teach positive and effective parenting skills
Secondary prevention	Reduce the severity and acute consequences of the child adverse experience, thereby reducing the incidence of adverse outcomes associated with ACEs	• Programs that identify and intervene on families experiencing violence and abuse • Trauma informed care to identify and immediately intervene on ACEs • Psychological first aid that reduces psychological impact of trauma
Tertiary prevention	Treat and reduce the long-term consequences of ACEs	• Trauma informed care in health care and service agencies that integrate past traumatic experiences into, for example, care for chronic illnesses • Programs that identify and reduce risky health behaviors associated with ACEs • Social marketing campaigns that build empathy with ACE consequences

These phases are cyclical and can influence each other. For example, an individual who has an ACE-related health outcome may be less likely to introduce ACEs into the life of their child if they have received trauma informed care to reduce the consequences of their health outcome.
ACE, adverse childhood experience.

or delay a health problem. Selective interventions target a specific subgroup at higher risk for developing a health problem. Indicated interventions target subgroups already affected by a health problem or engaged in a health risk behavior to avoid worsening.[374]

Public Health and Education: Advancing the Inner Curriculum

Given the high numbers of youth experiencing ACEs, trauma, and mental health challenges and evidence of health benefits from MBIs, experts have called for a reexamination of the content and pedagogy underpinning the modern educational system to include mindfulness and "the inner curriculum":

> *If by 'education' we mean the shaping of our identity, agency, well-being, dispositions toward life, ethics, ways of being-knowing-acting in the world, and our ability to respond intelligently to life situations …then our brains-minds do not wait*

> *for an experience to be called a 'math lesson' in order to 'get' 'educated'. They are 'educated' here and now. …The narrative that runs in your mind throughout your day (e.g., your worries, hopes, dreams, thoughts of your social-image, body-image), your emotional life, and your body sensations are all subject matter that forms an inner curriculum. We are constantly 'educated' from within and from without, but the problem with 'education' is that we hardly think this is the case.*[375]

MBIs that offer an "inner curriculum" have the potential to build resilience, social-emotional learning (SEL), and connections to self and others, which can provide a foundation for health and well-being. Moreover, a 2015 review by Columbia University revealed an 11 to 1 average return on investment for six evidence-based SEL programs.[376,377] Given the potential benefits to health and wellbeing, and cost effectiveness, MBIs merit examination as a tandem public health and public education intervention. Taken together, these findings illustrate how public health and public interventions are increasingly intertwined. Adolescents spend most of their time in schools, and the major challenges facing school administrators around problematic student behavior and poor health demonstrate the necessity of integrating public health and education interventions.

Description of the PINS Program

Overview

PINS began offering mindfulness classes in 2014 and now operates in 8 PPS high schools.[378] The PINS MBIs is a universal approach to increase youth mindfulness skills and positively impact health and wellbeing. However, given that many high-needs youths are referred by school staff due to adversities or problems, it is also a selective and indicated prevention approach. For youth with ACEs, PINS may provide secondary or tertiary prevention.

Consequently, this research examines the effects of PINS on adolescent health/wellbeing generally, but also analyzes effects on those with ACEs. This may help to understand if and how PINS functions as universal, selective, and/or indicated prevention, and the role it may play in secondary and tertiary prevention by reducing the detriments of ACEs. PINS classes can therefore be considered a "trauma-responsive program", which bridges between universal trauma-informed awareness and a suite of trauma-specific tools and approaches.[379] Trauma-responsive programs like PINS are designed, implemented, evaluated, and continuously improved to shape the environment in a specific way: they "identify and positively deal with the impacts of exposure to trauma in the present while preparing them for diminishing risk and improving outcomes for the future."[380]

Schools, Teachers and Training

For the purposes of this study, three of the eight schools in which PINS operates were recruited. The schools chosen for the study have had PINS the longest amount of time, offer the full curriculum (while two of the schools offer a partial curriculum), and represent a breadth of student diversity. In each school, a PINS instructor leads program implementation, assisted by a co-teacher assigned by the school. PINS instructors and school-appointed co-teachers in grades 9 through 12 from each school participate in a 5-day training that covers topics such as the program's history and philosophy, what mindfulness is, and the curriculum.

During trainings, teachers practice implementing all lessons in the curriculum, learn how to establish a safe caring environment and manage group dynamics, and overcome challenges (such as dealing with disengaged students and mandatory reporting). All PINS teachers and co-teachers are (re)trained every year in August, prior to the beginning of the school year. Additionally, PINS trainers, who are also seasoned teachers, provide ongoing feedback via

weekly or bi-weekly calls or meetings, and observe classes at each school 1-3 times per term. They provide positive feedback and suggestions to each teacher to improve their instruction.

Anticipated Reach

The PINS program targets PPS students in grades 9 through 12 of all genders, races/ethnicities, and backgrounds. The classes aim to engage any student who is interested in the class, and no previous knowledge of or experience with mindfulness or yoga is required. Most schools offer two or three classes per term, with 15-30 students per class – averaging about 50-80 students per school per term.

School officials, such as principals, counselors, or teachers, often refer students facing adversity to the course. For example, school counselors may refer students who are having challenges with mental health, drug use, unstable home lives, or the recent loss or death of loved ones. This was confirmed during informal information gathering sessions with students in the 2016-17 school year. Many students revealed that a school official, teacher, or peer suggested that they take the class because of the potential benefits it might have in helping the student deal with a major life challenge they were facing.

Aims, Approaches, and Activities

The primary goal of PINS is "practicing focusing one's attention, and being present without judgement and with compassionate curiosity and acceptance of what is occurring".[381] PINS uses four of the five MBI types/approaches (outlined in Table 2.4): focused attention, open monitoring, mind-body, and body-mind. The only approach PINS does not intentionally use is automatic self-transcendence (AST), although AST may be possible through certain PINS activities. Typical class activities include instructor explanation of key concepts; sitting, walking,

or guided meditation; breathing exercises; individual and dyad sharing; small group discussion; partner and group activities (e.g., practicing reflecting listening, role playing, creating skits to illustrate concepts learned); journaling; and mindful movement, such as yoga.

The Curriculum

The PINS curriculum is divided into 36 classes that are taught one per week over a five-month period. This includes 26 unique class topics, six of which are covered over two class periods (marked with *), and three administrative classes (two for pre/post questionnaires and one final recap/wrap-up class):[382]

1. Welcome and introduction to mindfulness*
2. Community building
3. Environment of CARE (Confidentiality, Acceptance, Reverence, Empathy)
4. Directing the attention*
5. Sitting meditation
6. Body scanning
7. Energy follows attention (setting intentions)
8. Journal decorating
9. Walking meditation
10. Self-talk*
11. Compassionate being
12. "If you really knew me"
13. Mindful eating*
14. Balance
15. Duality
16. Coming back to center
17. Intimacy
18. "How we survived our lives" (survival strategies and the birth of the judge)*
19. Aspects of the personality*
20. Who is here? (recognize aspects of the personality one becomes identified with in a moment of stress, what self-talk arises, and how to offer oneself compassion)
21. Projection
22. Review of class tools
23. Circle of acceptance (understand the practice of acceptance and its benefits)
24. Conscious, compassionate communication*
25. Loving-kindness meditation
26. Gratitude as a practice

Anticipated Impacts

No formal studies of PINS have been implemented; however, informal data collection was conducted during the 2016-17 school year, including pre/post class evaluations and information gathering sessions with students. The results revealed that student participants benefit by gaining enhanced coping skills, reduced anxiety and negative emotions, and an improved ability to relate to others. During information gathering sessions, many students stated that PINS was the most useful class they had taken, and that they found it much more useful than standard academic courses. Students also cited specific PINS tools or concepts they found most helpful, including understanding how the conditioned mind works, identifying and changing patterns of negative self-talk, managing difficult emotions (e.g., anger, sadness, anxiety), breathing exercises, recognizing one's survival strategies, and practicing compassionate and reflective listening. Given the information students shared, anticipated impacts include improved mental health; improved behavioral health, coping strategies, and resilience; better school performance, in terms of better grades and fewer disciplinary actions; and improved relationships with others.

Conceptual Framework: MBIs as Health Promotion and Prevention

The few theories of change on MBIs are general conceptual frames not linked to specific public health outcomes and fail to fully account for developmental differences in youth, trauma and ACEs research; nor do they typically include racially/ethnically and socioeconomically diverse populations. Based on the literature reviewed above, Figure 1 was developed as an initial theory of change to be refined by study findings and future research. The authors hypothesized that as an MBI implemented in a public-school setting, PINS constituted a health promotion and tripartite primary, secondary, and tertiary prevention program. The World Health Organization

defines promotion as: “The process of enabling people to increase control over, and to improve, their health. It moves beyond a focus on individual behavior towards a wide range of social and environmental interventions.”[383] This increased control and improvement is an intentional focus of the PINS course and other MBIs. Prevention interventions use targeted efforts to reduce the development and severity of poor health before disease occurs (primary), at early stages of disease when signs and symptoms have not emerged or are mild (secondary), or to slow disease progression or address health problems that have emerged (tertiary).[384] Additionally, wellness is defined as individual health attitudes and decisions that drive positive health behaviors and outcomes.[385]

As seen in Figure 2.8, MBIs are hypothesized to improve proximal adolescent functioning and behaviors that can be measured in physical, neurocognitive, psychological, social, and life outcome. These effects are anticipated to be more easily achieved and to have more lasting effects over the life course due to heightened neuroplasticity in adolescence, leading to improved distal health and life outcomes in adolescence and adulthood. Higher ACEs score and exposure were hypothesized to moderate the effects of MBIs on outcomes. Given the poorer health outcomes expected among students with higher ACEs, these youth are expected to experience greater outcome changes due to having greater need to achieve homeostasis in well-being, while being less likely to be in homeostasis pre-MBI. Similarly, students from targeted social position groups—who are more likely to experience discrimination and oppression, and corollary allostatic load and health issues[386,387,388]—were also hypothesized to experience greater benefits. These marginalized groups included female, gender non-binary, LGBTQ+, non-US-born, racial/ethnic minority, and low-SES students.

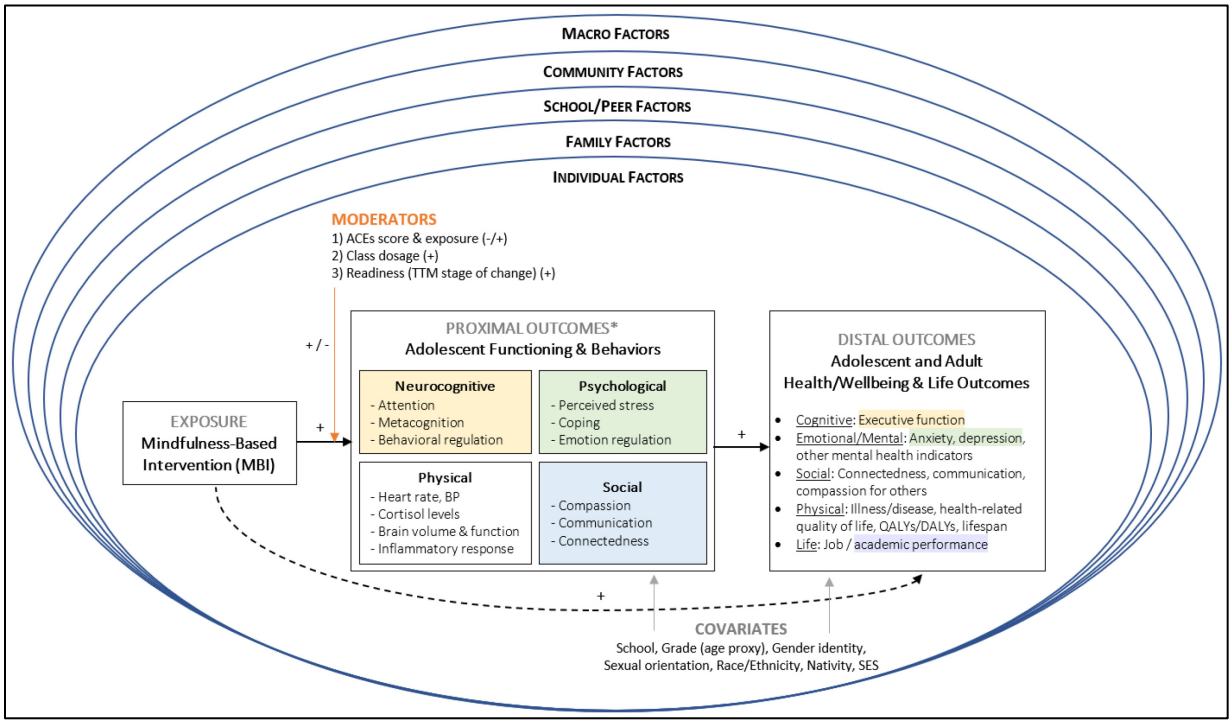
Given the trauma burden of high-ACEs and marginalized youth, these students may experience more distress as they begin to examine the innerworkings of their bodies, minds, emotions, and behaviors—and many develop awareness of trauma, marginalization, and oppression in their lives—before experiencing improvements. Trauma response often includes the suppression of painful memories and associated feelings in the body and emotions. As students begin to explore bodily sensation, emotions, and thoughts through mindfulness, memories and accompanying sensations may be accessed. Thus, skillful teachers and a safe container or environment, such as those which PINS aims to provide, are imperative for this work. Some studies show that if not delivered skillfully, MBIs can worsen health among marginalized youth.[389] Since PINS is considered one of the most comprehensive, rigorous, and high quality MBIs in the US (e.g., rigorous training, teacher hiring requirements, extensive curriculum, trauma-informed approach, etc.), it was hypothesized that high-ACEs youth would experience additional benefits beyond lower-ACEs peers. Repeating the class (higher dosage) and greater readiness for change in the Transtheoretical Model (TTM) were also hypothesized to be moderators.[390] Finally, differences were also examined among subgroups according to school, grade, gender, sexual orientation, race/ethnicity, nativity, and SES. To our knowledge, this is the first study to examine the impacts of a mindfulness program by level of ACEs, expanded ACEs, with a focus on multiple marginalized groups, and TTM stages of readiness for change.

A central question of this dissertation was whether the Peace in Schools Mindful Studies course produced improved neurocognitive, psychological, and social outcomes in adolescents, and whether youth with higher ACEs or from marginalized groups experienced additional positive outcome changes. Additionally, this study aimed to develop a theory of change informed

by the findings, which included clarifying if and how PINS may be functioning as a promotion and prevention program. The study was guided by the conceptual framework in Figure 2.8.

PINS produces outcome changes in adolescent health and wellbeing: which outcomes had greatest effect sizes, if they differ by level of ACEs or other characteristics (e.g., gender, sexual orientation, race/ethnicity, socioeconomic status [SES], etc.), and whether they were aligned with expected outcome changes in the TOC

Figure 2.8. Model of Hypothesized Effects of MBIs on Adolescent Health and Life Outcomes



Description of Conceptual Framework

The conceptual framework is based on the current literature base and key facets of the PINS curriculum, and illustrates the causal pathways between MBI exposure and changes in adolescent health outcomes. While there is evidence that many areas of adolescent functioning and behavior are influenced by MBI exposure (neurocognitive, psychological, physical, social, life outcomes), this study focuses on changes in neurocognitive, psychological, and social

outcomes. All outcomes were explored within an indigenous social-ecological, or multilevel, framework in which outcomes range from proximal (at the individual level) to distal (at the macro level). A life course perspective was also employed, acknowledging how experiences earlier in life influence human development, health, and life outcomes across the life course.

All outcomes being examined are based on studies with youth and adults that demonstrate improvements in these areas resulting from MBIs, as summarized below.

Neurocognitive Outcomes

In the neurocognitive area, this study examined whether changes occur in students' attention, behavioral regulation, and executive functioning, as a result of participating in the PINS curriculum.

- *Attention.* Multiple RCTs of youth MBIs show reduced attention problems[391], and improved attention[392], selective attention[393], and attention task performance.[394,395] A meta-analysis of youth MBIs by Zoogman, et al. also showed an association with increased attention across studies.[396] Attention training in MBIs has also been shown to lead to improved executive function.[397]
- *Metacognition and executive function (EF).* Studies have shown MBIs improved metacognition and overall EF[398,399], especially among children with poorest initial executive functioning.[400,401]
- *Behavioral regulation.* Impaired EF leads to poor impulse control and disruptive behavior.[402] In contrast, several studies have shown that MBIs lead to prosocial behavior[403,404,405,406,407], prosocial attitudes[408], and self-control/regulation[409,410,411,412,413] – which can be attributed to improved EF. Quasi-experimental studies also show MBIs are

associated with improved prosocial skills and reduced externalizing behavior[414,415,416], and fewer negative behaviors in response to stress[417].

Psychological Outcomes

In the psychological area, this study examined whether changes occur in students' perceived stress, coping, and emotional regulation as a result of participating in PINS. Psychological outcomes were selected based on previous studies that have demonstrated improvements in these outcomes and winnowed to correspond to the aims and practices outlined in the PINS curriculum. There is ample evidence that MBIs are associated with improved psychological well-being.[418,419,420] RCTs show improved mental health[421], especially for those with mood disorders[422,423,424]; psychosocial improvements[425,426]; and mental quality of life.[427,428,429]

- **Perceived stress.** Five RCTs of youth MBIs showed reduced perceived stress/distress[430,431,432,433,434]; improved distress tolerance, stress reactivity, and resilience to stress[435]; and improvements in stress-related biomarkers (e.g., blood pressure, heart rate).[436,437,438] Two adult RCTs also showed mindfulness meditation directly improved stress[439] and mediated reduction in perceived stress.[440] Improvements in perceived stress, involuntary stress response, and relaxation have also been found in quasi-experimental studies.[441,442,443,444,445,446,447]
- **Coping.** Studies show that socioemotional skills taught in most MBIs help foster adaptive conduct.[448,449] Three RCTs of MBIs with youth[450,451,452,453] and one with college students[454] showed improved problematic responses/coping in response to stress, such as rumination, self-hostility, intrusive thoughts, emotional arousal. A cohort study

also showed MBI participation was associated with improved positive coping, specifically substance use resistance self-efficacy.[455]

- **Emotion regulation.** Studies demonstrate that socioemotional skills taught in many MBIs can help to recognize and manage emotions.[456] Studies utilizing neuroimaging substantiate this understanding: participating in MBIs "increases… neural activity and gray-matter volume in regions implicated in socioemotional functioning, including the frontoinsular, prefrontal, and limbic regions".[457,458] MBIs are associated with improved emotion regulation[459] and reduced problematic responses to stress including emotional arousal.[460] Quasi-experimental studies have also shown improved emotional regulation/reactivity[461] and externalizing behaviors.[462,463]
- **Anxiety.** Childhood stressors predict dysregulated hypothalamus-pituitary-adrenal (HPA) axis and neuropeptide function in the brain, which are key to psychopathologies such as anxiety and mood disorders.[464,465,466] MBIs have shown to improve dysregulation in the brain's amygdala volume (part of the limbic or "emotional" brain"[467]), resulting in anxiety reduction.[468,469] These neuroscientific findings have been corroborated by several studies. Three RCTs of youth MBIs show reduced anxiety symptoms in non-clinical[470,471] and clinical study populations[472], as did two quasi-experimental studies of MBIs with youth[473,474] and one with adults.[475] In addition, five studies of 8-week MBIs – three with youth[476,477,478] and two with adults[479,480] – showed significant improvements in anxiety. Finally, one study showed that after negative moods a single MBI session can get youth out of a ruminative state[481], which is strongly associated with anxiety.[482]
- **Depression.** Three RCTs of MBIs with youth have shown reduced depressive symptoms.[483,484,485] A fourth RCT of mindfulness-based cognitive therapy (MBCT) was

shown to protect against relapse to clinical depression for youth with history of childhood trauma, but not across all participants with recurrent depression.[486] This suggests MBIs may have differential impacts on depression outcomes among youth with ACEs/trauma. Additionally, four 8-week MBIs with youth showed improvements in depression.[487,488,489,490] Pre/post-test findings of a CBT MBI with clinical adult patients also improved depression.[491] Lastly, some studies show mixed results: two RCTs show decreased depressive symptoms both in youth participating in CBT-based MBIs and usual treatment.[492,493]

Social Outcomes

In the social area, the study examined whether changes occur in students' perceived compassion, communication, and connectedness as a result of participating in PINS. While studies of MBIs that explicitly measure these outcomes were sparse, including these outcomes was important because 1) it would contribute to the evidence base; 2) the PINS curriculum explicitly aims to develop skills in this area; and 3) improvements in neurocognitive and psychological functioning and related behaviors (areas 1 and 2) have been shown to contribute to improved social capacities. For example, Brock et al.[494] and Bull et al.[495] have shown that executive functioning correlates to prosocial behavior, which may lead to improved social interactions marked improved compassion, communication, and/or connectedness.

- **Compassion.** Interventions that include mindfulness practices help "familiarize[e] youth with their changing bodies and minds and… afford… them conscious and compassionate ways of relating to their changing natures and those of their peers".[496,497] Socioemotional skills taught in many youth MBIs have been shown to foster empathy.[498] An adult RCT

also showed mindfulness meditation improved forgiveness, which requires feeling and/or practicing compassion.[499]

- **Communication.** Research on Acceptance and Commitment Therapy (ACT), which has been increasingly operationalized in MBIs, holds that psychological inflexibility is attributed to cognitive fusion: "excessive or improper regulation of behavior by verbal processes, such as rules and derived relational networks".[500] ACT can help to improve regulation and behavior linked to verbal processes, which may help to explain improved communication skills found in several studies of youth MBIs. MBIs with youth have shown improved teacher-reported student social competence[501] and student-reported social skills[502]. An RCT showed an MBI reduced interpersonal sensitivity and quasi-experimental studies have shown that MBIs are associated with improved hostility.[503,504]
- **Connectedness.** Socioemotional skills taught in many MBIs can help people maintain positive interpersonal relationships.[505,506] Quasi-experimental studies show MBIs are associated with improved externalizing behaviors that can compromise connectedness (e.g., aggression, cheating, stealing).[507,508] One cohort study showed an MBI was associated with qualitative improvements in relationships.[509] Finally, mentoring relationship quality has been significantly associated with, and plays a mediating role in, fostering positive youth-parent and youth-teacher relationships, leading to better outcomes, such as self-esteem, academic attitudes, prosocial behaviors, and less misconduct.[510] Given the strong mentorship role of PINS teachers, participating youths' connectedness with parents, teachers, and peers is hypothesized to improve by participating in the program.

(See Appendix A for additional details about outcome domains, constructs, instruments considered, and supporting literature.)

Current Knowledge and Significance of This Proposed Study

Reducing ACEs can lead to significant health, social, and financial benefits. Childhood adversity is an important public health issue because it negatively affects wellbeing over the life course, impairing social, emotional, moral, and cognitive development and resulting in steep human, social, and financial costs. Evidence from the fields of neuroscience, psychology, and public health reveal how MBIs can shape neural networks, impacting patterns of thought, behavior, relationship development, and mental and physical health outcomes.[511,512,513] However, researchers have an incomplete understanding of the causal mechanisms by which MBIs may improve adolescent health, particularly among those with ACEs. This study aims to begin to address the issues and gaps outlined below.

An assessment of the evidence for the effectiveness of MBIs on improving youth health reveals that:

1) *Compared to adults, literature reviews assessing the evidence of MBI effectiveness among youth, and studies on the impact of MBIs on youth with ACEs, are sparse.*[514,515,516,517,518,519] Three of the reviews on MBIs among youth review MBIs broadly[520,521,522], while several have a narrow focus, such as yoga in schools[523,524], sitting-meditation efficacy[525], CBT sleep interventions[526], and youth with cancer[527] or chronic illness[528]. Each also has notable limitations: failing to use rigorous review methods and only including limited date ranges, MBI types, settings, populations, health outcomes, and/or study designs. A major gap in the field is an assessment of the quality of evidence on health impacts of MBIs among youth with ACEs. A recent study is the

first to review the landscape of studies on MBIs reducing the detriments of ACEs in youth, but it is descriptive, does not assess the quality of the evidence, and is not systematic or comprehensive.[529]

2) *There is an understanding that youth MBIs should account for adolescent development, but little evidence assessing whether youth MBIs do uniquely impact adolescents, how, and the results of such tailoring.* Tan outlines several important developmental considerations. First, adolescents have less developed memory and attention, so MBI activities should be shorter and more repetitive. Second, youth engage in mindfulness exercises frequently and informally (e.g., drawing, eating, listening to music), rather than in formal settings as adults often do. Third, MBIs should consider youth brain development, such as "limited verbal fluency, abstract reasoning and conceptualization skills". Additionally, adolescent sensation-seeking and need for movement and physical activity should be addressed by incorporating multi-sensory and movement experiences into youth MBIs.[530]
3) *Theories of change explaining the MBI mechanisms that produce health outcome changes in youth (and adults) are needed, both for general populations and youth with ACEs.* Many researchers have called for such explanatory theories to be developed, and those that exist are incomplete and do not clearly, comprehensively explain likely core program components and causal pathways that lead to desired outcomes.[531,532] Furthermore, knowledge of the impacts of child abuse and trauma have not yet been well integrated into explanatory models and research designs measuring the impacts of MBIs on health outcomes among youth.

To address the above gaps, this dissertation will advance a theory of change outlining core program elements and causal pathways explaining how the PINS MBI leads to desired health outcomes for both the general and ACEs-affected youth. Given the unique stage of development young people experience, including increased neuroplasticity, they are primed to develop lifelong habits and abilities that translate into health, social and financial wellbeing, and productivity within society. This knowledge can further . inform prevention research, since youth MBIs like PINS can serve as universal, selective, and/or indicated interventions for youth experiencing adversity in the past, present, and/or future. Given that PINS currently serves as a secondary and tertiary prevention program but might also serve a role in primary prevention of toxic stress and ACEs/trauma across generations and within families, broader school environments, and communities.

Chapter Three: Research Design and Methods

"The master's tools will never dismantle the master's house." ~Audre Lorde[533]

Overview

This chapter describes the study methods used to assess the implementation and impact of PINS on adolescent health and well-being outcomes during a semester-long Mindful Studies course. Study aims and hypotheses are outlined, followed by a discussion of data sources, study context and population, and study design. Descriptions of the tools and measures used to collect data, the analytic plan and methods for each study aim are discussed. The final section presents an overview of RESJB principles used in the study and the research ethics implications.

Study Aims and Hypotheses

Based on the findings of a process evaluation, an outcome evaluation, and a process to develop a logic model and TOC, the PINS program from September 1, 2018 to May 1, 2019, the following aims and hypotheses were evaluated:

Aim 1: Assess the implementation of PINS with a process evaluation.

1) Hypothesis: While attempting to maintain strict fidelity, PINS teachers adapt activities to school contexts and student characteristics that differ by school, leading to some differences in program delivery, participant perceptions of the program, and outcomes across schools.

Aim 2: Identify whether PINS produces outcome changes in adolescent health and wellbeing: which outcomes had greatest effect sizes, if they differ by ACEs exposure or other characteristics (e.g., gender, sexual orientation, race/ethnicity, SES, etc.), and whether they are aligned with expected outcome changes in the TOC.

1) Hypothesis: Significant improvements will be seen in three outcome change areas from pre- to post-survey: neurocognitive, psychological, and social.
    a. *$H_{0(null)}$: There is no significant change between mean pre- and post-survey measures of neurocognitive, psychological, and social outcomes across the study sample.*
2) Hypothesis: Greater positive outcome changes will be observed in subgroups disproportionately affected by ACEs, including female,[534,535,536] gender non-binary,[537,538] LGBTQ+, racial/ethnic minority,[539,540,541,542] non-US-born, and low-SES[543,544] students; differences may also be observed by school and grade.
    a. *$H_{0(null)}$: Mean change (pre-to-post) in neurocognitive, psychological, and social outcomes does not differ by subgroup, including by gender, sexual orientation, race/ethnicity, nativity, SES, school, and grade.*
3) Hypothesis: Moderation effects will be detected, which demonstrate greater improvement among youth with higher ACEs exposure, in more advanced stages of readiness for change within the Transtheoretical Model (TTM), and higher PINS class dose.
    a. *$H_{0(null)}$: Mean change (pre-to-post) in neurocognitive, psychological, and social outcomes does not differ by ACEs exposure, readiness for change, or class dose.*

Aim 3: Develop a logic model and theory of change (TOC) outlining *whether* and, if so, *how* PINS mindfulness classes improve adolescent health/well-being.

Study Design

In Aim 1, the study design consisted of a process evaluation, which included qualitative data collection via interviews, focus groups, observations, and a program document review conducted from 2018-2019. Program components adapted from Linnan and Steckler's (2012) process evaluation framework were assessed: training, reach, fidelity, and contextual influences.[545] For aim 2, an outcome evaluation was conducted with a prospective cohort design using a pre/post-survey with students in the PINS Mindful Studies course at the beginning and end of the fall semester (September 2018-January 2019). Student characteristics and outcome data were collected for 14 measures of neurocognitive, psychological, and social well-being. For Aim 3, workshops were held with PINS staff to develop a logic model prior to data collection for Aims 1 and 2, and which informed development of a TOC. The TOC was also iteratively shaped by study findings from Aims 1 and 2 over the course of the study. Findings from each aim were triangulated to supplement and inform findings of the other aims.

Data Sources

Primary data was collected as part of a unique study: *Adverse Childhood Experiences (ACEs), Mindfulness, and Adolescent Health: Assessing How the Peace in Schools Program is Implemented and Affects Student Health in Portland Public High Schools*, or the AMA Health Study. This study was approved by both the Johns Hopkins University IRB (IRB No.: 00008608) and Portland Public School Research and Review Committee. This mixed methods study employed a pre/post-survey, and four qualitative methods: interviews, focus groups, observations of trainings and classes, and a program document review. Program documents included the PINS attendance records, curricula, training manuals, class activity materials, communications from PINS teachers and PPS co-teachers related to the study, PINS videos, and more.

Study Context, Study Population, and School Selection

Context

Portland, Oregon is the second largest city in the northwest region of the US with 2.45 million people in the metropolitan area.[546] Of these, 70.5% identify solely as white and 29.5% as non-white, including Black or African American (5.8%), American Indian and Alaska Native (AI/AN; 0.7%), Asian (8.1%), Native Hawaiian or Pacific Islander (NH/PI, 0.7%), Hispanic or Latino (9.7%; 1% of whom identify as white), and two or more races (5.5%).[547] Additionally, 13.9% are foreign born and 14.9% live in poverty; however, these numbers are likely underreported given that Census and other data sources often undercount people experiencing homelessness, recent immigrants, people with limited English proficiency, and others.[548]

Study Population

Students. The study population included 171 adolescents ages 15 to 18 enrolled in 7 class sections of the PINS Mindful Studies course across during the fall 2018 semester in three Comprehensive PPS high schools in Oregon: Cleveland, Lincoln, and Madison. Additionally, parents or guardians, PINS and PPS co-teachers, school staff and policymakers, student alumni, and youth MBI experts were recruited. This sample size was higher than most studies on youth MBIs.[549] Students participated in focus groups discussions (FGDs; n=87), observations (n=171), and surveys (n=91), and generated field notes (e.g., journal entries, student art, emails from teachers, class activity materials, and more). Students who both met inclusion criteria—1) being ages 15 to 19, 2) enrolled in the PINS course, 3) understanding written and spoken English or Spanish, and 4) with signed consent/assent form(s)—and were present on data collection days participated in the FDGs, observations, and surveys. Each FDG included 9 to 15 students

selected using purposive sampling, and who had minimum 75% attendance in the class. Observations included students, the PINS teacher, and PPS co-teacher present on the day of the observation. A total of 116 students completed either the pre- or post-survey; of these, 91 had sufficiently complete data for analysis.

Table 3.1 Summary of Study Sample

School / Group→ Method ↓	**Cleveland HS**	**Lincoln HS**	**Madison HS**	**PINS Staff Trainings**		**Total**
Surveys (n)	38	28	25	--	--	91*
FDGs (n, #)	38, *3 FDGs*	24, *2 FDGs*	25, *2 FDGs*	--	--	87*
Observations (n, #)	79, *3 obs*	48, *2 obs*	44, *2 obs*	12, *3 obs*	--	171*, 12
	Parents/ Guardians	**Student Alumni**	**Teachers & co-teachers**	**School staff & policymakers**	**Youth MBI Experts**	
IDIs	9	4	11	5	5	34

***** *Indicates number of students; no asterisk indicates adults.*

The diversity of the student population from which the sample was drawn was an important consideration that impacted the extent to which the study findings would be generalizable. The Pacific Northwest region of the United States where Portland, Oregon is located is often thought of as a mostly ethnically homogenous white/Caucasian majority. At the time of the AMA Health Study, and presently, the PPS District was/is more diverse than Portland's general population, including 45.5% non-white students: 15.7% Latino, 11.3% black/African American, 9.1% Asian, 7.8%% multiracial, ~ 1% NH/PI, and ~1% AI/AN.[550] There was also significant diversity of language, culture, ability, and socioeconomic status across all PPS. 8.4% of PPS students received English as a Second Language (ESL) services, 14% required special education services, and 25.6% were eligible for free meals.[551] Given student and family diversity, the PPS District also generally provides information in six supported languages, and required that study materials also be offered in these languages: English, Chinese, Russian,

Somali, Spanish, and Vietnamese.[552] Thus, the diversity of the study population from which the sample was chosen increased generalizability of the findings.

Adult (non-student) participants. Parents/guardians of all students in the seven participating sections of PINS classes were invited to participate by sending multilingual materials home with students. Parents were also contacted by phone and invited to participate. PINS and PPS provided contact information for others to participate, including school principals and counselors, education policymakers, alumni of the PINS program, and youth MBI experts.

School Selection

Three schools were identified in discussion with the PINS staff, and PPS District leaders, principals, and counselors of the schools granted permission to conduct the study at the three schools. The researcher met with the principals of each school to present the study design and aims, and obtain a signed memorandum of understanding to formalize participation. Criteria used to select schools included: 1) PINS having been established there for at least three years, 2) schools that, taken together, represented high and broad student diversity, and 3) schools where PINS had a strong relationship with administrators, which was needed to sustain a semester-long study.

Aim 1 Methods

Overview

A process evaluation is used to assess the program implementation and quality, and can help to determine keys to success or identify reasons why expected results are not observed. Conducting a process evaluation, in addition to an outcome evaluation, can help to avoid error that can result from evaluating a program that is inadequately implemented.[553] This study's

process evaluation was informed by a logic model and TOC (details below) as a guide to assess key program components and determine the extent to which PINS was operating as intended. Process evaluation findings were intended to inform the study, be shared with PINS leadership and staff improve the PINS program, and inform the implementation of other MBI programs.

Data Sources and Sampling Methods

Employing an RESJB best practice, data for the process evaluation was collected from six diverse stakeholder groups: students; PINS trainers and teachers, and PPS co-teachers; parents/guardians; student alumni; school staff and policymakers; and youth MBI experts. The process evaluation included hour-long semi-structured IDIs and brief phone interviews (15-20 minutes each), FDGs, observations, and program document review (i.e. training documents, attendance sheets, teacher and student written reflections, etc.). The researcher visited each of the 7 PINS class sections across the 3 participating schools to recruit students and families, discuss the study, and answer questions. Purposive and snowball sampling were used to recruit parents or guardians, teachers, school staff and policymakers, student alumni, and youth MBI experts to participate in IDIs. A list of key contacts from the stakeholder groups was provided by PINS staff. Online research and in-person inquiry were used to gather additional contact information as needed (e.g., online staff directories, school staff meetings, family events, etc.). Most invited participants agreed to participate in the study. Special emphasis was placed on gathering a diversity of perspectives representing all three schools and varied backgrounds, such as different race/ethnicity, sex and gender identity, SES, and other demographic characteristics; duration of involvement with PINS; and/or levels of authority within the school system.

Process evaluation components and corresponding participants/data source

<u>Program evaluation components</u>

The following program components were assessed in the program evaluation:

1. *Training* – Training was assessed by reviewing training materials and training session attendance records, conducting semi-structured interviews with trainers and trainees (facilitators), and observing trainings. The following training indicators were included:
    - # of trainings delivered versus # of trainings planned
    - # of trainees who completed all training sessions, or 90% of all training sessions
    - % of trainees who demonstrate knowledge of training topics
    - Effective strategies for engaging PINS trainees
    - # of observation/feedback sessions conducted by trainers for PINS teachers
    - Barriers to understanding (areas requiring attention/other instructional approach)
    - Key components of training that inform ways to modify or scale future training
2. *Reach* – Reach, or the percentage of the target audience that participated in the intervention, was estimated using school enrollment data and PINS class attendance records provided by teachers and schools. Indicators of reach included % of eligible students in a school who enrolled in the PINS class and % of eligible students that attended 90% of class sessions. Additionally, some IDI and FDG questions explored perceptions of PINS target audience and who the class was or was not reaching.
3. *Fidelity* – Fidelity is the extent to which an intervention or program is implemented as designed (i.e. adherence to an intervention protocol or program curriculum).[554] Facets of fidelity examined included: a) integrity and adherence to curriculum, including adaptations (intentional changes) and drift (unintentional changes), b) quality, and c) participant experience, or how PINS classes were received by students. A key component of fidelity was program quality, including the presence and pedagogical approach of the

teachers, classroom environment, extent of the course content, tailoring of content to meet student needs, and opportunities for real-world application of mindfulness. Assessment of fidelity also included capturing participant experience, challenges faced, and best practices. Fidelity was measured via observations, FDGs, IDIs, and program document review. Fidelity indicators included: % of 36 total PINS class sessions completed; % of 26 unique topics covered; % of students who commented or actively participated in a class session (participant engagement); % of class lessons completed; and % of class time spent on mindfulness activities and mindful movement.

4. *Contextual influences* – External factors often influence program implementation. IDIs and FDGs conducted with stakeholders asked about unexpected events, barriers, and other factors that influenced the way the program was delivered or received by participants. Examples of contextual influences were: limited physical space; school requirements that affect co-teacher selection; the extent of efforts by school and/or PINS staff to inform students about the class; the number of PINS classes offered; and scheduling conflicts.

Suggested improvements, lessons learned, and best practices that emerged while gathering information about all four program components above was also collected and summarized. These findings were intended to be shared in the hopes that they might inform and enhance the implementation of PINS, and possibly other youth MBI programs, in the future.

Participant Groups Represented across Process Evaluation Components

Adolescent participants. FGDs were used to address participant experience, such as PINS ideas and tools they found most useful, how useful they found PINS compared to other classes, what they liked most and least, and their ideas about how to improve PINS. Qualitative themes

that emerged included descriptions of how students believed the class had impacted them or led to changes in their own behaviors and the behaviors of peers.

Parents. Parents were interviewed briefly by phone about their expectations of PINS classes, perceived benefits, issues, concerns, and suggested program modifications.

Teachers and Trainers. PINS teachers and trainers, and PPS co-teachers were interviewed about their experience facilitating PINS classes. Questions focused on perceptions about the core elements of PINS, strengths and weaknesses, challenges faced, and suggested improvements. Program documents and observations were used to assess training and fidelity.

School officials. Principals, school counselors, and PPS co-teachers were interviewed about their perceptions of the core elements of PINS, perceived benefits for students, strengths and weaknesses, challenges faced, and suggested improvements.

Data Collection

Process evaluation methods and participants are summarized below and on the next page in Table 3.2:

- Seven focus groups – 1 with each of 7 classes across 3 schools
- 10 observations: 7 in each of the 7 PINS sections across the schools, and 3 of trainers and teachers in PINS trainings
- 34 interviews: 9 brief phone interviews with parents (representing all three schools) and 11 semi-structured interviews with PINS teachers, PPS co-teachers, and PINS trainers; 4 with student alumni; 5 with school staff and policymakers; and 5 with youth MBI experts
- Program document review – review of program documents and field notes provided by facilitators, trainers, school officials, and students, including 3 program manuals (e.g.,

curricula, facilitator guides, reports), 35 student journal entries, 7 sets of class activity materials, 12 email communications or notes, and 8 video or audio recordings.

- 91 pre/post questionnaires with PINS students, to supplement process evaluation findings

Interviews

Recruitment. The study was designed to conduct at least 16 semi-structured IDIs with PINS teachers and trainers, PPS co-teachers, student alumni, and school staff and policymakers. Ultimately, 25 were conducted. Recruitment entailed a combination of purposive and snowball sampling. PINS staff provided a known list of key contacts of facilitators, trainers, and school staff and policymakers. In addition, at the beginning of each class term, a letter was sent home to parents/guardians to inform them about the study, obtain consent for their child's participation, and collect contact information for parents/guardians interested in participating in interviews and focus groups. Efforts were made to interview parents/guardians across the three schools.

Interview Protocol. In-person interviews were conducted in a discrete location convenient to participants, offered in English or Spanish, and lasted approximately 45 to 60 minutes for all stakeholder groups, except parents/guardians. Brief phone interviews with parents/guardians were offered in English or Spanish and lasted <20 minutes. Each interview was audio recorded with a handheld USB recording device, after consent to record was obtained. All recordings were transcribed verbatim, removing any personally identifiable information (PII) for analysis. The interviewer also took handwritten notes during and following the interview.

Instrumentation. Semi-structured interview guides were developed, drawing from similar projects and included closed- and open-ended questions (See Appendix B). Questions for facilitators covered all four components: training, reach, fidelity, and contextual influences. Since the four PINS trainers were all facilitators, they were asked an additional set of questions

Table 3.2. Data Collection Overview for the Process Evaluation				
Stakeholder Group (n)	**Method**	**#**	**Process Evaluation Component(s)**	**Timeline**
1. Youth participants (171; was est. 130-190 across all data collection methods)	Focus groups (*1 per class, 7 classes total, 9-15 students each*)	7	Fidelity; contextual influences; reach	End of semester
	Pre/post-evaluations	91*	Fidelity; contextual influences	Start and end of semester
	Observations (*3 per school; observing facilitators & youth simultaneously*)	7	Fidelity; contextual influences	Once at each school during lessons 1-12, 13-24, & 25-36
	Program documents (*e.g., journal entries, class exercises, etc.*)	--	Fidelity; contextual influences	Collect throughout semester, analyze after semester
2. PINS teachers and trainers, and PPS co-teachers (11)	Semi-structured interviews	11	Reach; training; fidelity; contextual influences	Throughout semester
	Observations (*7 in schools; observing facilitators & youth simultaneously; 3 in trainings*)	10	Fidelity; contextual influences; training	Once at each school distributed over time—across lessons 1-12, 13-24, & 25-36
	Program documents (*e.g., attendance records, written reflections, field training notes*)	--	Reach; fidelity; contextual influences	Throughout semester
3. Parents/guardians (9)	Brief phone interviews (*3 per school*)	9	Fidelity; contextual influence	End of semester
4. School staff and policymakers (5)	Semi-structured interviews	5	Fidelity; contextual influence	Throughout semester
	Program documents (*e.g., records of student referrals to PINS, attendance, disciplinary actions, etc.*)	--	Reach; contextual influences	Collect throughout semester, analyze after semester
5. Student alumni (4)	Semi-structured interviews	4	Fidelity; contextual influences; reach	Throughout and after the semester
6. Youth MBI experts (5)	Semi-structured interviews	5	Contextual influences; area expertise	Throughout and after the semester

**116 students took a survey, but only 91 completed pre- and post- and had sufficiently complete data for inclusion.*

about their roles as a trainer. School officials and parents were asked about participant experience and contextual influences. Interviewees were also asked about their perceptions of the TOC, core elements of PINS, strengths and weaknesses, challenges faced, and suggested improvements.

Focus Groups

Feasibility. The feasibility of conducting 7 focus groups was tested and demonstrated prior to this study. Nine informal focus groups with 10-12 students each were conducted by the student researcher in the spring of 2017 over three days as part of pilot study.

Recruitment. The study was designed to conduct an FDG at the end of the semester among each of the 7 classes across 3 schools (3 at Cleveland, 2 at Lincoln, 2 at Madison), each with 6 to 8 student participants (42-56 students total). However, given high student interest, 87 students ultimately participated across the 7 focus groups, with 9 to 15 students per FDG. Focus groups included students of all grades, gender identities, SES levels, class dosages, etc. Variation both *within* and *between* classes and schools were assessed during analysis. The study was also originally designed to include up to three focus groups with parents/guardians. However, given human and financial resource constraints, FDGs with parents were not conducted.

Focus group protocol. FDGs were conducted at school during PINS class time toward the end of the semester and were held in a separate classroom. Students who chose to participate received class credit and did not miss any new content the day of the FDG. Students who chose not to participate engaged in PINS class activities with their standard teachers. FDGs lasted approximately 45 to 60 minutes. Each focus group was audio recorded with a handheld USB recording device, after receiving participants' consent to record. All recordings were transcribed verbatim, removing any PII for analysis. The interviewer took notes during the interview, and wrote expanded notes following the FDGs.

Instrumentation. Semi-structured focus group guides, consisting of closed- and open-ended questions, were developed in consultation with PINS staff (See Appendix C). The focus group questions solicited student perspectives on topics such as how students got involved in the class, PINS ideas and tools students found most useful, how useful PINS is compared to other

classes, what they liked most and least, and how to improve PINS. FDGs assessed both process evaluation components (Aim 2) and some outcome change elements (Aim 3).

Observations

Observation protocol. Class observations were used to assess fidelity, training, and contextual influences. As with the focus groups, observations assessed program components relevant to the process evaluation (Aim 2), as well as some outcome changes (Aim 3). The researcher sat apart from participants and generally did not engage them while observing training and classroom activities. Few deviations occurred during exceptional circumstances, including a school shooter incident.

Instrumentation. The student researcher took notes during observations of trainings and PINS classes, and completed observation checklists during each class observation, which was developed in consultation with PINS staff (See Appendix D). The checklist included fidelity to training guidelines (for trainings), the curriculum (for classes), and contextual guidelines in classes (e.g., maintaining an Environment of CARE). Levels of student participation, student-teacher interactions, and comments made about changes students are experiencing (e.g., "I find it easier to deal with stress," "The exercise on survival mechanisms helped me understand my mom better," or "Reflecting on my negative self-talk brought up a lot of feelings and made me feel sad and depressed.") were also noted.

Program Documents and Field Notes

Program documents were used to capture information about training, reach, fidelity, and contextual influences. PINS and school staff provided the student researcher access to some school records (e.g., demographic information, attendance, school performance, disciplinary actions, how many PINS classes are offered, PINS class description in school

handbooks/educational materials, etc.). PINS trainers and facilitators also provided access to training and class records (e.g., attendance, participation, assignment completion). In addition, documents including students' written and video-recorded reflections, poetry and art, and journal entries were reviewed to better understand fidelity and contextual influences.

Considerations about Validity of Qualitative Data[555]

In qualitative research, validity is not achieving an "objective truth" or using controls to deal with threats to validity, as in quantitative studies. Instead, as Maxwell explains, validity is determined in accordance with "the correctness or credibility of a description, conclusion, explanation, interpretation, or other sort of account." This is achieved by minimizing threats to validity and collecting evidence that makes rival hypotheses implausible. Consequently, he elaborates, a researcher should also always be looking for evidence that challenges their conclusions. Strategies employed in this study to address threats to validity included:

1. Intensive, long-term involvement*:* By partnering with PINS over time and collecting multiple types of data, the data was more complete, varied, and largely based on direct inference. "Repeated observations and interviews, as well as the sustained presence of the researcher in the setting studied can help to rule out spurious associations and premature theories… allow[ing] greater opportunity to develop and test alternative hypotheses…"
2. Rich data was collected, providing "a full and revealing picture of what is going on" via long-term involvement, use of myriad methods, data collection with varied stakeholders and multiple time points, and creating/analyzing interview and focus group transcripts.
3. Respondent validation was also used: the researcher systematically shared data and conclusions with stakeholders to ensure they resonated and to avoid misinterpretation.

4. Intervention was also used in this study (to an extent) by assessing program implementation and sharing findings with the intention to fortify best practices and redress problem areas. Identifying the processes driving change, and sharing and corroborating findings, strengthened validity – and facilitated program change.
5. Searching for discrepant evidence and negative cases also enhanced validity by analyzing data that did not conform to the hypotheses. This involved critical examination and openness to critiquing or modifying emerging conclusions and interpretations.
6. Triangulation, the strategy of using a variety of data sources and methods, was employed in this study. It helped to minimize the risk of drawing conclusions reflecting systematic biases or limitations of a particular data source or method, to gain a broad understanding of the study topic, and to assess the generality of findings.
7. Numerical summaries of data or findings were also used to outline the amount and distribution of qualitative data supporting a conclusion, as well as discrepant cases.

Data Analysis

Qualitative data was primarily analyzed to understand training, reach, fidelity, and contextual influences. Reach was calculated for each school by taking the number of students who participated in 27 out of 36 (90%) lessons divided by the total number of students referred to the program, as well as the total student population. Data was further disaggregated by age, sex, and race/ethnicity to determine whether certain sociodemographic characteristics were more represented in the PINS program. To assess fidelity, participant experiences, and contextual influences, transcripts from the IDIs and FDGs were analyzed and coded using Atlas.ti version 13 software. First, using both an inductive and deductive thematic analysis, open coding was conducted by reading and re-reading each transcript to identify preliminary topics, ideas, and

patterns of meaning.[556] Deductive codes were generated from the initial logic model and theory of change, as well as from the questions in the focus group and in-depth interview guides. As more transcripts were read, the codebook was continuously revised until all relevant textual data was assigned to a unique code, and saturation was achieved.[557] In the next phase of coding, axial coding, codes were organized into categories and sub-categories. Matrices of the key codes and associated quotations were then created and organized by school and participant groups. Using a constant comparison method, emerging themes were identified by color coding key patterns across matrices.[558] Observation findings were synthesized according to reach, fidelity, participant responsiveness, and school-level contextual factors. Field notes were also analyzed and synthesized using thematic analysis, and mini high-impact case study findings were summarized, such as a PINS teacher guiding students through a school shooter incident.

Aim 2 Methods

Overview

Pre/post-surveys were administered to students in the PINS Mindful Studies course at the three participating schools at the beginning and end of a semester-long class. Three health/well-being outcome areas/domains were measured: neurocognitive, psychological, and social. Measures that were validated among youth and diverse communities, as well as associated with significant change in previous studies on MBIs were selected for this study. Statistical analysis was used to determine changes in outcomes between pre-test and post-test, as well as examine sub-group differences. These findings were triangulated with qualitative data collected among youth participants selected for the process evaluation.

Data Sources, Sampling Methods, and Sample Size and Power Calculations

All students ages 15 to 19 enrolled in the Mindful Studies course in the three participating schools during the fall 2018 semester were invited to participate in the AMA Health Study. Recruitment was conducted via class announcements by PINS teachers and PPS co-teachers, IRB- and PPS-approved materials sent home with students, and brief in-person recruitment sessions by the researcher during PINS class time at the beginning of the semester. Participating students were required to understand written or spoken English or could complete the survey with a school-assigned language assistant, which PPS standardly provides in schools. A signed parental/guardian consent form and minor assent form were required for students under age 18 to participate. Students age 18 and older signed their own consent forms and were encouraged to discuss participating with a parent/guardian. Participation in the study was voluntary, and any student not wishing to participate was provided with alternate activities on the days that study activities were taking place without any penalties.

Sample Size, Power, and Effect Size Calculations

Of the 190 students projected to participate in the PINS classes in the fall 2018 semester, it was estimated that 70% needed to return completed consent forms to yield a sample size of around 133, the minimum number needed to meet power and effect size calculation requirements to detect medium effect sizes (See Table 3.3). This sample size was higher than most studies on youth MBIs.[559] However, only 116 students were ultimately recruited to participate in the survey, and 91 of them completed both pre- and post-surveys with sufficient data to be included in analysis. This was closer to a typical sample size for youth MBI studies, allowing for large effect size detection. While a total of 116 students took the pre-survey, only 93 completed both the pre- and post-surveys: 21 missed the post-survey and make-up days offered, one changed

school, and one dropped the class. Additionally, data from two students was excluded due to >25% missingness.

Table 3.3 below outlines the minimum sample sizes needed to perform a paired t-test with low type I error ($\alpha <= 0.05$), high power (at least 0.8,), the ability to detect small (.02), medium (0.5), or large (0.8) effect sizes,[560] and deriving standard deviations from similar studies.[561,562] Since 190 students were projected to participate in PINS classes in the fall of 2018, the student researcher aimed for n=133 (a 70% response rate), which would have allowed for detection of medium effects (See Table 3.3, column B). However, given that the final sample size was 91—with data sets from n=82 to n=91 across final outcomes assessed—medium-to-large effect sizes were ultimately detected (See Table 3.3., column C).

Table 3.3. Sample Size and Power Calculations*

Parameter	Definition	A) Small effects	B) Medium effects	C) Large effects
α (two-tailed)	p-value, or threshold probability for rejecting the null hypothesis (type I error, false negatives)	0.1, 0.05, 0.01	0.1, 0.05, 0.01	0.1, 0.05, 0.01
β	Probability of failing to reject the null hypothesis under the alternative hypothesis (type II error, false positives)	0.1	0.05	0.05
Power (1- β)	Probability of detecting a true difference, or rejecting the null hypothesis and accepting the alternative hypothesis	0.9	0.95	0.95
E[563]	Expresses the size of the difference between two groups (i.e., pre- and post-test values)	0.2 (small)	0.5 (medium)	0.8 (large)
SD[564]	Spread or dispersion in a set of values around the mean	1.0	1.4	2.0
n, minimum needed	Sample size needed to detect given effect size with the set error & desired power	91	91	81

**Calculations were performed on the University of California San Francisco Clinical and Translational Science Institute Sample Size Calculator: http://www.sample-size.net/sample-size-study-paired-t-test/.*

Outcome Evaluation Components and Measures

Outcomes examined were based on studies with youth and adults that demonstrate improvements in these areas resulting from MBIs and had to align with the areas the Mindful

Studies class was intended and hypothesized to create changes. Outcome domains fell into three focal areas: 1) *neurocognitive*: attention, behavior regulation, and metacognition, 2) *psychological*: compassion for self, perceived stress, coping, emotion regulation, anxiety symptoms, depression symptoms, thoughts of self-harm 3) *social*: compassion for others, connectedness, and social competence. Information on student demographics, grades, and three possible moderators – ACEs scores, class dosage, and readiness for change – were also collected.

Measures

All measures chosen had strong psychometric properties (validity and reliability) and preference was given to those validated among youth and diverse populations.

Student / Subgroup Characteristics. Questions to capture student identity or identifying characteristics were drawn from several sources to maximize responsivity to diversity, equity, and inclusion, rather than perpetuate harms that come from many standard forms of these questions, which are often limited, inaccurate, and oppressive, particularly toward marginalized groups.[565] The US Census and Youth Risk Behavior Survey (YRBS) was the source for many identity questions, including age, grade, and race/ethnicity. Questions on gender and sexual orientation, and race/ethnicity were based on previous studies among diverse communities, which allowed students to both self-identify in these areas and choose from a list of expanded categories.[566] The question on nativity came from the CDC-Kaiser ACEs Questionnaire, and questions on SES were modified from the Behavioral Risk Factor Surveillance System (BRFSS).

Moderators. This study assessed three variables for moderation effects: ACEs, readiness for change, and class dose. Class dose was collected through simple self-report. Readiness for Change was measured using the 12-item University of Rhode Island Change Assessment Scale (URICA) Delta Version to measure the TTM stages of change.[567] URICA includes four stages of

change: precontemplation, not intending to take action within six months; contemplation, intending to take action in the next six months; action, changed overt behavior for less than six months; and maintenance, changed overt behavior for more than six months.

Students were also asked to report their exposure to 10 traditional ACEs and four expanded ACEs. Traditional ACEs were from the CDC-Kaiser ACEs Male and Female Questionnaires.[568] To mitigate potential emotional triggering and (re)traumatization, students were only asked about ACEs once, on the post-survey. This also ensured accurate reporting since students might have experienced new ACEs during the study period. Students were asked to report their total number of ACEs (both traditional and expanded), but not specify which ones, which was hypothesized to increase validity by reducing response bias (e.g., social desirability bias). Four questions on expanded ACEs were developed by the researcher using ACEs literature on bullying (including cyberbullying), social isolation, neighborhood insecurity, and discrimination to include a multilevel understanding according to the indigenous socioecological model.[569,570,571,572,573 ,574] (See Appendix E for additional considerations about ACEs measurement.)

Neurocognitive outcomes consisted of attention and executive function. The 35-item Attention Subscale of the ADD-H Comprehensive Teacher's Rating Scale (ACTERs) – Self-report Questionnaire, which is tailored to adolescents, was used to assess attentional behavior patterns.[575,576] The 55-item Behavior Rating Inventory of Executive Function (BRIEF2) Self-report Version was chosen to measure executive function, as it is the leading executive function scale and tailored to adolescents ages 11-18.[577] BRIEF2 is composed of three indices—the Behavior (BRI), Emotion (ERI), and Cognitive (CRI) Regulation Indexes—that make up a Global Executive Composite (GEC), or total score. The authors underscore that integrative

executive functions cannot be easily parsed apart. The BRI consists of the *Inhibit Subscale*, which assesses inhibitory control, and *Self-monitor Subscale*, which examines awareness of how behavior impacts people and outcomes. The ERI included the *Emotional Control Subscale*, to measure the ability to modulate emotional responses, and *Shift Subscale*, to examine the ability to adjust to change. The CRI comprised the proximal outcomes of *Working Memory*, or ability to remember information to complete a task, *Plan/Organize*, the ability to manage current- and future-oriented tasks, and *Task Completion,* a more distal outcome and adolescent-specific subscale about difficulty finishing tasks. (See copies Appendix F for copies of surveys.)

Psychological outcomes included the self-compassion, perceived stress, coping, emotion regulation, and anxiety and depression symptoms. Self-compassion was measured using Dr. Neff's 12-item Self-Compassion Scale—Short Form (SCS-SF), including six pairs of items, each forming a subscale: self-kindness, self-judgment, common humanity, isolation, mindfulness, and over-identification.[578] The 10-item Perceived Stress Scale (PSS) asks students to appraise stress in their lives and was chosen due to its focus on use with a low-SES people, specifically those with a minimum junior high education.[579,580] The 28-point Brief COPE was used, which consists of approach and avoidant coping subscales.[581,582,583] The 10-item Emotion Regulation Questionnaire (ERQ) assesses tendencies to regulate emotions on two subscales: expression suppression, which is linked to poor communication and increased stress, and cognitive reappraisal, including attention control and mentally changing the meaning of emotionally evocative stimuli.[584] The 7-item Generalized Anxiety Disorder Scale-7 (GAD-7) was used to assess anxiety symptom frequency and also chosen for having been tested with some diverse communities.[585,586,587] Lastly, a depression index was created with five of six items from the

Global Early Adolescence Study (GEAS) that loaded well, and one item, thoughts of self-harm, was assessed as a separate outcome.[588]

Social Outcomes included social competence, connectedness, and compassion for others. The 12-item Social Competence Scale for Teenagers was used to assess skills needed to function in groups.[589] The 8-item Social Connectedness Scale-Revised was used to measure the extent to which youth ages 14-18 feel socially connected to others.[590] Finally, a 24-item Compassion for Others Scale consisted of the same six subscales as the SCS, with four questions each.[591] Compassion for Others—a *social* measure of concern for the suffering of others—was measured in addition to Compassion for Self—a *psychological* measure examining one's own feelings of self-kindness and self-acceptance. These measures are authored by the same scientist but measure different domains or levels on the indigenous social-ecological framework.

Data Collection

The computerized surveys were administered using Research Electronic Data Capture (REDCap), a secure and encrypted data tool administered through Johns Hopkins University. This included audio computer-assisted self-interview (ACASI) software, allowing participants to hear the questions—shown to improve validity in studies with adolescents.[592,593,594,595,596,597] A paper option was also available, if needed or preferred, but no students chose this option. The survey was designed to take 30 minutes, but students were given up to 60 minutes to complete it. Computerized evaluation data was automatically imported into Excel spreadsheets by REDCap. The survey was administered on school computers, with space between students to maximize privacy.

Each student was assigned a unique identifier that they used for both pre- and post-surveys, so that their responses were not linked to their identities. The list of names and

corresponding identifiers was only available to the student researcher and kept in a locked file cabinet and only used to link pre/post questionnaire responses. There was also an intention to link survey data with school performance data—such as grades, attendance, and disciplinary actions—but the complexity and time required made this unfeasible within the study timeframe.

Given the known and potential vulnerable status of many student participants, trauma-informed approaches were used, including limiting the number of sensitive questions; only asking about ACEs once; modifying wording of sensitive questions to be less triggering; informing students that sensitive questions would be asked – and why – ahead of time; and emphasizing the option to skip questions, pause to use mindfulness tools if feeling triggered, or stop participating at any time. A system to flag and follow-up with students about concerning responses to sensitive questions was also used. A separate space was designated for the researcher to meet with flagged students. The researcher and PINS staff worked closely with the school principals and counselors, who were prepared in advance to anticipate students might be triggered or ask to speak with someone in the final survey question or in-person after the survey. Several students opted to directly be referred to counseling services during follow-up.

Considerations on Validity of Quantitative Data

Validity in quantitative research is often described as arriving at or measuring an "objective truth" by eliminating all potential sources of bias via careful study design and statistical analysis. However, many other scientists and intellectuals contend that there is no way to arrive at the "objective truth" of a thing, but that one can come asymptotically close to it by collecting an abundance of data and perspectives. By carefully designing this study to minimize biases and threats to validity, and by incorporating a rich array of quantitative and qualitative data, greater understanding of this topic can be achieved, and rival hypotheses can be examined

and rendered more or less plausible. Specific threats to internal validity of the quantitative data include sample selection and researcher bias, since the study was not blinded. These cannot be avoided due to its observational (rather than experimental) design: students opt into classes. Data triangulation from multiple sources and stakeholder groups and efforts to remain objective were used to mitigate potential bias. Additionally, a second researcher, \reviewed all statistical analyses performed for an additional layer of objectivity in the quantitative analysis.

Data Analysis

Overview

STATA 13 statistical software was used to conduct effect size analysis to determine what outcome changes PINS classes most influenced (i.e. which health/wellbeing metrics differed significantly from pre- to post- data collection). Subgroup analysis was also performed to assess how outcomes differed by subgroup, including school, grade, gender, sexual orientation, race/ethnicity, nativity, and SES. Moderation effect was analyzed by ACEs exposure, stage of readiness for change, and class dose.

Exploratory Data Analysis

Missingness and normality. The study data was explored for missingness, normality, and equal variances. As the percent of missing data was small (most outcome scales were completed by over 90% of participants, in many cases over 95%), listwise deletion was determined to be suitable for handling missing data. Exploratory data analysis included the following:

1) *Testing assumptions of normality.* Stata tools used to test normality included:

   Analyze → Descriptive Statistics → Explore

   Display → Plots, Descriptive → Stem-and-leaf

   Normality plots with tests

Normality was found. Thus, parametric paired samples t-test were used. If non-normality had been found, either a parametric paired samples t-test for unequal variances or a nonparametric test were to be used (e.g., Mann-Whitney U [Wilcoxon rank sum] Test). Parametric tests can perform well with non-normal continuous data if the sample size is large enough and *should* be used if the pre- and post-data have different spread (dispersion). Nonparametric tests may not provide valid results if the data have different dispersion but work well if samples have similar dispersion.[598]

2) *Variance ratio test for equal variances.* The sdtesti command, sdtesti $n_1\ \bar{X}_1\ s_1\ n_2\ \bar{X}_2\ s_2$, was used in Stata to test the hypothesis of equal variances, $H_0 = \mu_1 - \mu_2 = 0$. This determined whether a paired t-tests would be run with equal or unequal variances.
3) *Other exploratory data analysis.* Box and whisker plots and other graphics were used to better understand data distributions, variability, outliers, and skewness.

Principal Component Analysis (PCA) and Exploratory Factor Analysis (EFA). We originally considered 13 outcomes, performing PCA, EFA, and testing ordinal Cronbach's alpha, a measure of internal consistency indicating how closely related a set of items in measuring an outcome. Based on results showing poor internal consistency indicated by unsatisfactory ordinal alpha (<.65) and unsatisfactory factor loadings (<.4), further analysis was restricted to 12 outcomes because data for certain outcomes did not have needed metrics to perform factor analysis. (See Appendix G.) This may have been influenced by a small sample size, scales with many items (i.e., >20 items), or the scales not being appropriate for the study population/data set.

After factor analysis, a final list of 12 outcomes was generated, many being subscales of original measures: 1) behavior regulation (BRI), 2) emotion regulation (ERI), 3) self-compassion

(SCS), included with slight caution given some borderline factor loadings, 4) perceived stress (PSS), 5) expression suppression (ERQ), 6) cognitive reappraisal (ERQ), 7) cope approach (Brief COPE), 8) anxiety symptoms (GAD-7), 9) depression symptoms (GEAS), 10) self-harm thoughts (GEAS), 11) social competence, and 12) connectedness (see Appendix H). One outcome, attention, was excluded due to low factor loadings (<.4 for 7 of 10 items) and high uniqueness (≤.89). The attention measure was also shown to be measuring two underlying concepts with the study sample, rather than the single concept the measure was designed to register. Given data distribution and metrics required for factor analysis, EFA could not be completed (i.e., resulted in semi-definite error) for four variables: GEC, CRI, avoid coping, and Compassion for Others.

Descriptive statistics. After PCA and EFA were performed, a table of descriptive statistics for eligible outcomes was generated that summarized data by key characteristics. (See Table 4.1.)

Paired T-tests. Paired t-tests were used to assess changes between pre- and post-survey means for all 12 outcomes. Three significance levels were tested: 95% (α=0.05), 99% (α=0.01), 99.9% (α=0.001). Given sample sizes were just slightly above the minimum sample size of 81 required to detect medium effect size and satisfy power calculations, a unique subsample was used for each outcome consisting of all participants with pre- and post-survey data. Sample sizes ranged from 82-90. (See Appendix H.) As seen in Tables 2 and 3, outcome change was reported as effect size (ES) with standard error (SE), as well as percentage change to facilitate comparison across measures with different valuation scales.

The pre-post study design results in repeated measures, or paired observations by the same individuals at three different time points. Thus, the samples are not independent. In this

case, the test statistic can be summarized as the mean difference ($\bar{x}_d = \bar{x}_{pre} - \bar{x}_{post}$) between the means of the pre-data ($\bar{x}_{pre}$) and post- ($\bar{x}_{pre}$) data. The null hypothesis holds that there is no statistically significant outcome change, or difference between the mean values of pre- and post-data; therefore, the mean difference would be zero. The alternate hypothesis holds that there is a statistically significant outcome change, or difference between the mean values of the pre- and post-data. The hypothesized mean difference, H_o, is set to zero. If H_o is rejected, this indicates a significant outcome change, or difference in the mean values of the pre- and post-data.

Null hypothesis	Alternate hypothesis
H_o: $\bar{x}_d = \bar{x}_{pre} - \bar{x}_{post} = 0$	H_a: $\bar{x}_d \neq 0$

Test statistic

$t = \frac{\bar{d} - \bar{x}_d}{\frac{s_d}{\sqrt{n}}} \sim t_{n-1}$ This simplifies to $t = \frac{\bar{d}}{s_{\bar{d}}} \sim t_{90}$

- n = 91 = the number of pairs (or individual students for whom pre- and post-data are collected)
- Where $\bar{d}$ = mean of the observed paired difference (pre- and post-data from the same students)

$$\bar{d} = \frac{\sum_{i=1}^{n} d_i}{n} = \frac{\sum_{i=1}^{n} (X_{1i} - X_{2i})}{n}$$

  X_{1i} and X_{2i} are the i[th] paired observations in samples 1 (pre) and 2 (post).
- And $s_{\bar{d}}^2 = \frac{\sum_{i=1}^{n} (d_i - \bar{d})^2}{n-1}$, such that $s_{\bar{d}} = \frac{s_d}{\sqrt{n}}$ = the standard error of the mean difference
- The 95% confidence interval for $\mu_d = \bar{d} \pm t_{(n-1,\alpha/2)} \cdot s_{\bar{d}} = \bar{d} \pm t_{(90,0.025)} \cdot s_{\bar{d}} = \bar{d} \pm 1.64 \cdot s_{\bar{d}}$
- H_o is rejected if $t_{obs} \leq -t_{n-1df,\alpha=0.05\,(2-sided)}$ or if $t_{obs} \geq t_{n-1df,\alpha=0.05\,(2-sided)}$
  - Given n = 91, there are 90 (or n-1) degrees of freedom
  - H_o is rejected if $t_{obs} \geq 1.64$

Effect size based on pre/post mean comparison was reported as a result of paired t-test calculations, as has been done by other studies in the field.[599] A rubric similar to Cohen's effect

size was used to determine whether outcome changes were small (0.2 to <0.5), medium (0.5 to <0.8), or large (0.8 or greater) in the field of youth MBIs.[600]

Subgroup analysis was conducted by performing stratified analysis for each student characteristic, using the complete data sets for each outcome and 95% significance level (α=0.05). Data was categorized into subgroups, which were manually reviewed to reflect meaningful categories and levels of aggregation that could be used to make strong statistical claims. For example, students provided both open text responses and selected from a list of categories to self-identify gender and sexual orientation. These were streamlined into expanded categories, but due to low numbers in each category, LGBTQ+ students were grouped together as a basis for statistically meaningful analysis (n=30).

Moderation analysis was also conducted to assess whether ACEs, stage of readiness for change, or class dose influenced the magnitude of outcome changes from pre- to post-survey, using stratified analysis as well. Pre-to-post mean change was examined by subgroup for each moderator of interest. For example, mean change for each outcome was examined for groups of students with 0 ACEs, 1-3 ACEs, 4-7-ACEs, and 8-10 ACEs to assess whether greater levels of ACEs were associated with different mean outcome change. The same procedure was repeated for each outcome by TTM stage of readiness for change (precontemplation, contemplation, action, and maintenance) and class dose (first time and repeating the class).

Calculations underlying subgroup and moderation analyses. The following calculations underly the subgroup and moderation analyses performed, where β_0 is the estimated mean for reference group, β_1 is the difference in the means of group 1 versus the reference group, and so on, testing each group against the reference group and the other subgroups.

Null hypothesis Alternate hypothesis

H_o: $\beta_1 = \beta_2 = \beta_3 = 0$ H_a: $\beta_1 \neq \beta_2 \neq \beta_3 \neq 0$, or equality of all means

If H_o is rejected, the mean for at least one subgroup is different from the reference group. Multiple comparisons tests were performed to determine which group(s) have means that differ from the reference group.

A Note on Causality

While causality is difficult to establish, Sir Bradford Hill's Criteria are used as a standard for determining if an explanatory (independent) variable truly has a causal relationship with a response (dependent) variable. Those criteria include: strength of association, consistency, specificity, temporality, dose-response, and plausibility.[601] This study examines the *strength of association* between pre- and post-evaluation results, the *consistency* of these results within classes at the same schools and across schools, and by design, accounts for *temporality* via the use of pre and post data collection. *Dose-response* is also considered, as ACE score (cumulative number) and class dose are examined in relation to health/wellness outcome changes. This study also addresses *plausibility* by mapping out and testing a logic model and theory of change grounded in scientific evidence and refined with input from diverse stakeholders (Aim 3). Finally, *plausibility* of the causal relationship is strengthened by statistically accounting for potential confounders, thereby eliminating alternate explanatory variables, as well as by triangulating data using multiple quantitative and qualitative methods and varied data sources. Thus, while this study could not definitively prove causality, it could demonstrate associations and provide evidence pointing to likely causal links.

Aim 3 Methods

Overview

A logic model was developed to graphically illustrate the program's inputs, activities, outputs, and outcomes. From the logic model, a TOC was created, outlining the underlying theory for how the program activities were expected to lead to changes in outcomes. The researcher developed a preliminary logic model and theory of change. Then, employing a Participatory Action Research (PAR) approach, sessions were held with key stakeholders to refine and finalize the logic model and TOC, which both informed, and was shaped by, the process and outcome evaluation findings.

Data collection procedures

Step 1: Draft a Logic Model and TOC

An initial logic model was drafted using PINS program documents, such as the curriculum and teacher training manuals, peer-reviewed journal articles, grey literature, and relevant seminal texts from multiple fields.[602,603,604] While the logic model graphically illustrated the resources, activities, outputs, and expected outcomes of PINS in a linear depiction, the TOC expanded on the model by describing potential pathways of change that linked activities to

Figure 3.1 Sample "So That" Chain

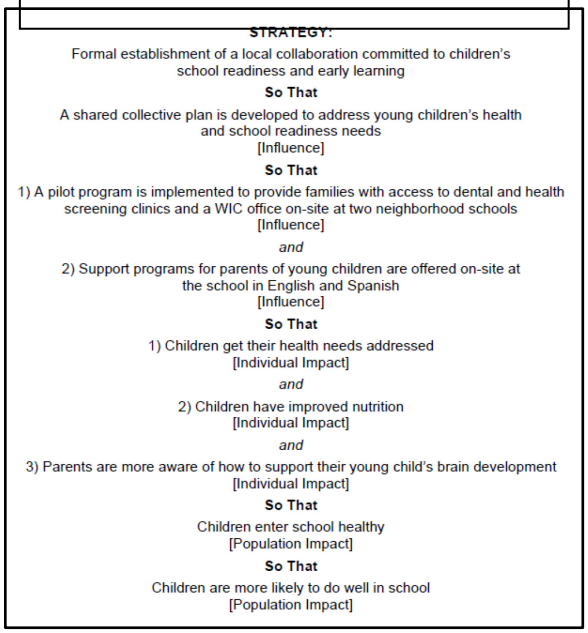
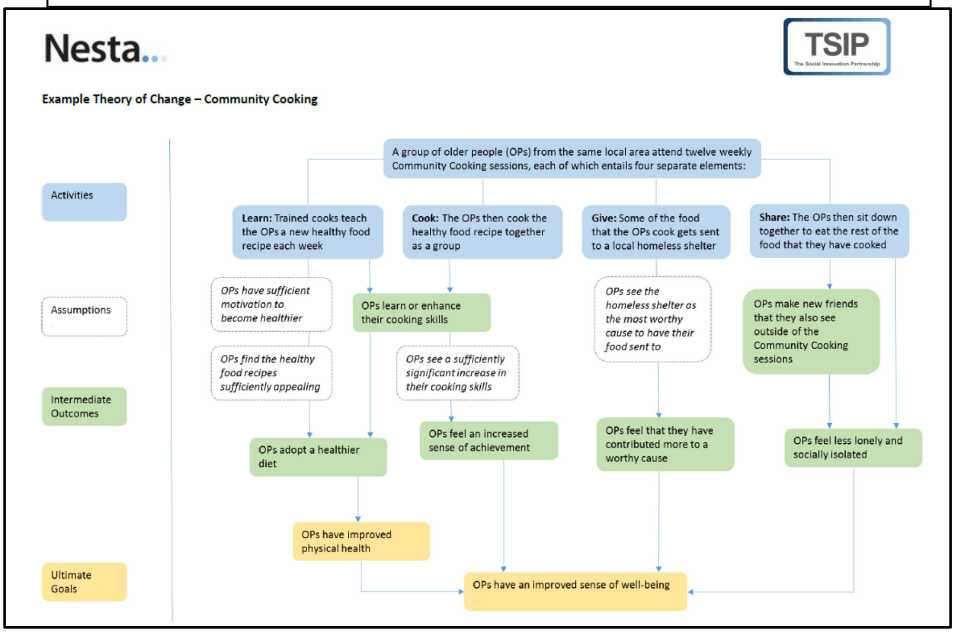


Figure 3.2 Example Theory of Change (or If-Then) Diagram



outcomes. It also served to offer explanations as to why some predicted associations may not have held up in practice, such as factors, assumptions, or preconditions that need to be met for the program to work.[605] Figures 3.1 and 3.2 illustrate TOC methodologies, including "So That" chains[606] and "If-Then" diagrams[607] used to formulate the TOC for this study.

The TOC incorporated information from the PINS website and curriculum and interdisciplinary peer-reviewed literature (e.g., public health, psychology, neuroscience, etc.) and addressed gaps by:

- Considering how the MBI processes are unique to adolescent development
- Addressing how MBIs may affect youth with and without ACEs and trauma differently
- Assessing unique contexts in which youth MBIs are implemented, such as schools
- Applying a socioecological model to assess multilevel impacts more extensively
- Drawing upon information sources that are often neglected

The PINS curriculum and teacher training manual were also used to glean pathways or mechanisms of change specific to the PINS program.

Step 2: Facilitate Small Group Sessions to Develop and Refine the Logic Model and TOC

Recruitment. Three small group sessions were conducted, each with four to eight representatives, consisting of PINS leadership and staff. The researcher was provided a staff contact list and contacted PINS staff by phone and/or email to plan days/times to meet. Sessions were held one to two weeks apart to allow time to synthesize findings and further refine the logic model and TOC. The core leadership of PINS (4 people) participated in the first and third sessions, and the leadership and the other teachers (8 people) participated in the second session—an interactive workshop—to broaden input. PAR or Community-based Participatory Research (CBPR) was used because partnership and collaboration among researchers,

community stakeholders, and organizations has been shown to enhance community research and leadership skills, and community-level action to improve wellbeing and health equity.[608]

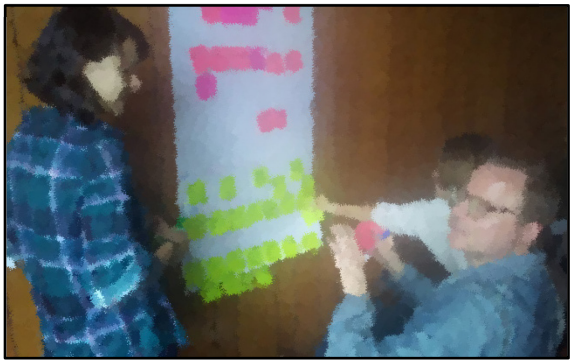
Instrumentation. The student researcher facilitated a process of visually mapping "So That" chains and an "If-Then" diagram to make visual and clarify the theory and causal mechanisms underlying the PINS program. An initial draft of a logic model and TOC developed by the student researcher was presented as a concrete starting point to be modified, built upon, or used as an example to refer to while a new logic model and TOC were created by the group.

A semi-structured guide, which included a blend of closed- and open-ended questions, was used as needed to elicit stakeholder perspectives and facilitate the TOC development process during the sessions. The student researcher facilitated a co-creative group process of diagramming a logic model and TOC (using So-That chains and If-Then diagrams) on large flip charts using Post-Its, and asked the group to consider the following topics/questions:

- What resources and other inputs does the PINS program require?
- What are the specific program activities, and which are considered "core"? How are "core" activities defined/selected?
- What is the program's intermediate and long-term goals?
- How PINS aim to achieve these goals?
- What specific processes does PINS include that lead to desired goals/outcomes?
- What changes or outcomes does PINS aim to effect?
- What factors or preconditions are required to ensure success?
- Are there any underlying assumptions that, if met or not met, may impact program outcomes?

Small group session protocol. Sessions were planned for "In-service"/"No School" days at the study outset, so that PINS teachers were available, but prior to major process and outcome evaluation data collection. Three small group sessions were conducted in a discrete location convenient to participants and lasted 2-3 hours each. Each session was audio recorded with a handheld universal serial bus (USB) recording device, after consent to record was obtained. The interviewer also collected field notes including handwritten notes and photographs, as seen in Figures 3.3 and 3.4 below (images were blurred to protect identities).

Figures 3.3 and 3.4 Pictures of LM and TOC Development Sessions with PINS Staff



Step 3: Finalize Logic Model and TOC

Pictures were taken of the diagrams created during the workshop and used as a basis for images created in a computer program, Visual Understanding Environment (VUE) from the Academy Technology at Tufts University. Session notes and audio recordings were reviewed and analyzed to summarize key findings and finalize the diagram. The TOC was then iteratively updated as process evaluation and outcome evaluation data were collected.

During data collection, the logic model and theory of change was shared with other stakeholders, such as school officials, PINS students, parents, and other MBI experts, as a form of "member checks". Soliciting feedback, and corroborating evolving understandings and conclusions enhanced the validity of qualitative data (discussed further below).[609] A color-based

coding system was used to identify and distinguish the various information sources incorporated. Decisions about whether to change the logic model and TOC based on other stakeholder feedback were made based on 1) the number of instances that different stakeholder groups made the same suggestion and 2) ultimately, based on whether the PINS leadership and staff agreed that the change should be made to more accurately explain how the program functions.

Research Ethics and RESJB Principles and Approaches

The Johns Hopkins University Institutional Review Board and PPS Research Review Committee approved the research protocol. Given that the study involved vulnerable participants, such as minors and people from marginalized groups, an in-depth risk mitigation plan was developed that included limiting the number of sensitive questions, following PPS Mental Health Supports protocol, and responding to concerns of possible abuse, neglect or harm to self or others as a Mandatory Reporter.

Students under age 18 required a signed parent/guardian consent form and signed a simplified assent form themselves. Student who were age 18 could provide individual consent and were encouraged to discuss the study with their parent/guardian. All adult participants signed consent forms specific to their roles. Oral consenting processes were also conducted before each FDG, IDI and observation. All participants were assured of privacy and confidentiality, informed of potential risks and benefits of the study, and told they were free to withdraw at any time without penalty. All participants consented to findings, including extracts from qualitative and quantitative data collection, being used in research reports or publications.

As discussed in Chapters 1 and 2, RESJB principles and approaches were also an integral part of a more complete and emergent set of public health research ethics practices. Harmful hegemonic narratives are pervasive in society, in academia in general, and in public health in

particular. This is evidenced by the preponderance of studies that exclude and devalue marginalized groups from public health research by: a) not conducting research relevant to these populations, b) failing to adequately design and implement studies in non-harmful ways within these populations, c) pedestalizing certain forms of data (e.g., randomized control trials and quantitative data) while relegating other forms (e.g., quasi-experimental studies, qualitative data), and d) reporting out data in ways that are often weaponized against these populations.

Additionally, the traumatic experiences of underserved groups, particularly POC, including Latinx, Asian, Pacific Islanders, Middle Eastern, and other immigrant populations in the US has been appropriately named "Medical Apartheid" by Dr. Harriet Washington. She has documented the pervasive history of medical experimentation and grotesque systematic abuses that have been suffered as a rule, and not an exception, throughout American history, leading to a deeply rational distrust of health and medical providers and institutions in POC communities.[610] Others have documented the legacy of unequal treatment and resulting disparities in healthcare as well.[611] These lived experiences translate into distrust of participation in health-related research by many of these populations, including the group that participated in the AMA Health Study. Consistently applying mindfully crafted and trauma-informed protocols, including many ways for participants' perspectives to be included, and addressing concerns with genuine, ongoing dialogue was an essential research ethics strategy. This study also led to the development of enhanced trauma-informed and culturally responsive research and evaluation protocols, which are a contribution to the fields of public health research and evaluation practices broadly.

Chapter Four: Results

"On the paths to remembering our oneness, we will undergo many initiations. An initiation can be anything that tests us, forcing us to look at whether the path we are following is appropriate or whether we want to change…Each is a personal and individual rite of passage that allows us to change and grow." ~Jamie Sams, spiritual leader of the Blackfeet tribe[612]

Overview

This chapter describes the findings for each of the following study aims: 1) to assess the implementation of PINS with a process evaluation; 2) to conduct an outcome evaluation of PINS, including whether changes in outcomes differed among adolescents by ACES exposure or other characteristics; and 3) to develop a logic model and TOC outlining *whether* and, if so, *how* PINS mindfulness classes improve adolescent health/well-being. The chapter begins with aa description of the study samples for all aims in the study, followed by the specific results observed for each aim.

Study Sample

Student Participants

The study sample was drawn from the diverse public-school system in Portland, Oregon, which is home to 2.45 million people in the metro area. The City of Portland and PPS District are highly diverse by race/ethnicity, gender, sexual orientation, and SES. In the 2018-19 schoolyear, there were 12,220 students enrolled in PPS high schools with a cumulative 4,506 students in the three participating high schools.[613] In the 2018-19 schoolyear, nearly 3,000 high school students received some level of PINS teaching, the majority receiving a short sample class as part of a freshman seminar series and several hundred taking the elective semester- or year-long Mindful Studies course. A total of 171 students participated in the AMA Health Study (the current study); of these, 87 participated in focus groups, (Aim 1), 91 completed pre/post-surveys (Aim 2), and 171 contributed via observations and other qualitative data collection activities.

Table 4.1 Descriptive Characteristics in Study Population (Aims 1-3)					
	AMA Health Study *(Aim 2)*		**Cleveland HS**	**Lincoln HS**	**Madison HS**
Characteristics	**#**	**Percent (%)**	*(For context and comparison for Aims 1, 2, 3)*		
Total	**91**	**100**	**1651**	**1,698**	**1,157**
School					
Cleveland High School	38	41.8	1,651	--	--
Lincoln High School	28	30.8	--	1,698	--
Madison High School	25	27.5	--	--	1,157
Age					
15	21	22.8	--	--	--
16	34	37.0	--	--	--
17	26	28.3	--	--	--
18	5	5.4	--	--	--
Do not wish to specify	6	6.5	--	--	--
Grade					
10^{th}	19	22.9	402 (33.2%)	407 (31.7%)	282 (33.9%)
11^{th}	39	42.9	403 (33.3 %)	435 (33.9%)	265 (31.8%)
12^{th}	33	36.3	406 (33.5%)	442 (34.4%)	286 (34.3%)
Class Dose					
1 time	80	87.9	--	--	--
2+ time	11	12.1	--	--	--
Gender					
Female	50	55.0	50%	52%	48%
Male	33	36.3	50%	48%	52%
Gender non-binary	8	8.8	--	--	--
Sexual Orientation					
Heterosexual	61	67.0	--	--	--
LGBTQ+	30	33.0	--	--	--
Race/Ethnicity					
White	54	59.3	69	70	35.1
Asian	7	7.7	9.6	10.2	14.4
Black or African American	6	6.6	2.6	1.4	15.5
Latinx or Hispanic	5	5.5	8.4	9.6	23.9
Multiracial	18	19.8	9.7	8.3	8.7
Native American	0	0	0.3	0.3	1
Pacific Islander	0	0	0.4	0.2	1.5
Do not wish to specify	1	1.1	--	--	--
Nativity					
US-born	74	81.3	98.7%^	98.1%^	87.7%^
Non-US-born	16	17.6	1.3%^	1.9%^	12.3%^
Do not wish to specify	1	1.1	--	--	--
SES					
Not low-SES	56	61.5	88.7%*	95.0%*	63.5%*
Low-SES	35	38.5	11.3%*	5.0%*	36.5%*
Special Education	--	--	11.2%	4.8%	15.2
Standard ACEs					
0 ACEs	20	22.0	--	--	--
1-3 ACEs	35	38.5	--	--	--
4-10 ACEs	35	38.5	--	--	--
Do not wish to specify	1	1.1	--	--	--
Expanded ACEs					
0 ACEs	7	7.7	--	--	--
1-3 ACEs	33	36.3	--	--	--
4-7 ACEs	31	34.1	--	--	--
8-14 ACEs	20	22.0	--	--	--
Readiness for Change (pre)					
Precontemplation Stage	22	24.2	--	--	--
Contemplation Stage	57	62.6	--	--	--
Preparation Stage	9	9.9	--	--	--
Maintenance Stage	0	0.0	--	--	--
Do not wish to specify	3	3.3	--	--	--

Sources: PPS gender figures[614], PPS race/ethnicity figures[615]

Percentages might not sum to 100% due to rounding; additionally, race/ethnicity may not sum to 100 because the ethnicity of Latino is not considered a discrete racial category, and therefore can overlap with other reported racial groups.

^% ELL used as a proxy for non-US-born; US-born number derived by subtracting ELL from 100

**% reported to be "economically disadvantaged"; not-low-SES number derived by subtracting low-SES from 100*

"Do not wish to specify" was a response option for all survey questions; if not included for an outcome in the table above, there were no such responses among participants.

Findings from qualitative and quantitative data across study Aims 1 and 2 were also used to develop a logic model and TOC (Aim 3).

The characteristics of the study sample for Aim 2 and available schoolwide data (used for context and comparison for Aims 1-3) are shown in Table 4.1. More detailed characteristics of the study sample participating in qualitative data collection were not captured, as it was not deemed necessary within the scope and design of this pilot project to achieve Aims 1 and 3. The study sample for Aim 2 consisted of 91 students: 38 youth from three classes at Cleveland HS, 28 youth from two classes at Lincoln HS, and 25 youth from two classes at Madison HS. This sample was also involved in parts of Aim 1, such as FDGs, observations, and other qualitative data gathered and field notes. Students were ages 15-18 with ~ 95% being under age 18 and represented grades 10-12. Nearly ninety percent (88%) of students were taking the class for the first time, and 12% for a second, third, or fourth time.

Gender and sexual orientation diversity were high among participants. Slightly over half (55%) of students identified as female, 36.3% as male, and 8.8% as gender non-binary, and between 48-52% being identified by PPS as male or female at the participating high schools. The percentage students of who self-reported as non-binary is noteworthy, given the national average of 0.004% transsexual adults (including non-binary) and as many as 2.7% of teens in grades 9-11

in other studies.[616,617,618] Moreover, two-thirds of students identified as heterosexual and one-third as LGBTQ+, the latter being 7.3 times the national average of 4.5%.[619] Self-report open text responses for the non-binary category included non-binary, intersex, and transgender. LGBTQ+ category responses included lesbian, bisexual, pansexual, queer, questioning, and unsure. Females and LGBTQ+ students were overrepresented in PINS classes versus schoolwide numbers. However, limitations in PPS data capture do not allow for a full comparison across gender and sexual orientation categories.

Race/ethnicity, nativity, and SES. Nearly sixty percent (59.3%) of participants identified as white and 40.7% as non-white, including 7.7% Asian, 6.6% Black, 5.5% Latinx, 19.8% multiracial, and 1.1% who did not wish to specify. By comparison, Cleveland and Madison had 69-70% white students, while Madison had 35.4%. The majority of the sample was U.S.-born (81.3%), while 17.6% were non-US-born, and 1.1% did not wish to specify in the study, compared to an estimated 1.3-12.1% ELL students, a proxy for immigrant students, reported by PPS. More than a third of students (38.5%) were categorized as low-SES using proxy measures of free/reduced-cost lunch eligibility, highest parental education of high school or less, or both, while 61.5% of students were classified as medium to high SES. In contrast, PPS reported 5.0%, 11.3%, and 36.5% of students being "economically disadvantaged" at Cleveland, Lincoln, and Madison, respectively. Thus, historically underserved racial/ethnic groups, non-US-born, and low-SES students appeared to be overrepresented in, or disproportionately opted into PINS classes.

ACEs exposure and readiness for change. High levels of ACEs exposure were reported. Using the traditional 10 ACEs, 78.0% of students had at least one ACE versus 64% of US adults.[620] While about twenty percent (22.0%) had no ACEs, 38.5% had 1-3 ACEs, and 38.5%

were in the high-risk category of 4-10 ACEs—more than triple the rate among US adults of 12.4%.[621] With 4 expanded ACEs included (14 ACEs total), 92.3% of students had at least one ACE: only 7 students (7.7%) reported having no ACEs, while 36.3% had 1-3 ACEs, 34.1% had 4-7 ACEs, and 22% had 8-14 ACEs—meaning 56.1% in the high-risk category. It appears that students with high levels of ACEs (and, for many, trauma) disproportionately opted-in to the PINS class. Additionally, this is the first study to examine whether stages of readiness for change moderate the relationship between a youth MBI and hypothesized health outcome changes. Nearly a quarter (24.3%) were classified in the pre-contemplation stage, while the majority (62.3%) were in the contemplation stage, and fewer than ten percent (9.9%) in preparation. No one reported being in maintenance, and 3.3% did not wish to specify. ACEs and readiness for change data is not typically collected by PPS or public-school districts.

Adult Participants

A total of 34 non-student adult participants took part in brief phone interviews, in-person IDIs, and/or observations, including 9 parents/guardians, 4 student alumni, 11 PINS teachers and trainers and PPS co-teachers, 5 school staff and policymakers, and 5 youth MBI experts. Parents/guardians, school staff, and student alumni represented varied perspectives from all three participating schools, ranging from those with limited knowledge of the PINS program to those who were deeply knowledgeable about and involved in the program. School staff and policymakers included school principals, school counselors and psychologists, and state-level educational and adolescent health policy officials. MBI experts included five leading experts in the field of mindfulness education, most of whom are located on the west coast of the US.

Aim 1

Process Evaluation of PINS Mindful Studies Course

The process evaluation included four components: training, reach, fidelity (including participant experience), and contextual influences. A synthesis of findings is presented below.

Training

Triangulation of program documents, staff attendance records, and observations of the teacher trainings revealed that each of the 12 Peace in Schools teachers received over 200 hours of intensive training and support throughout the year explicitly to ensure program fidelity, quality assurance, and continuous improvement. This included a weeklong orientation training prior to the school year, one-on-one meetings and classroom observations by a supervisor, periodic performance and 360-degree reviews, meditation retreats, and more throughout the semester. New teachers were also mentored by lead teachers for two years and shadowed established teachers in their classrooms. Three new teachers were onboarded during the study period and were each paired with a mentor after completing the orientation. Other teachers in the first two years of their tenure received ongoing mentorship and completed shadowing activities. These training activities were much more exhaustive than mindfulness teacher trainings described in IDIs with youth MBI experts, who typically noted having taken much shorter in-person or online trainings without 360-degree performance reviews, shadowing, ongoing mentorship, and other elements of the PINS training regimen.

Twelve out of ~35 days of trainings were observed, which revealed extensive use of experiential learning, including role play and discussion of common classroom events, immersive lesson plan walkthroughs, and embodied teaching practices outlined in the lessons. Trainings also included critical discussions about race, gender, equity, and inclusion. For example, teachers discussed how to make the content come alive for students from diverse racial

and cultural background, including those who might experience the "double challenge" of learning new content in a non-native language.

PPS co-teachers were provided with training prior to the start of the schoolyear, invited to participate in ongoing 4-day intensive or 8-week evening PINS trainings for educators, and received on-the-job training. PINS provided abridged manuals specific to co-teachers and invited them to collaborate closely with the PINS partner teacher.

Reach

Of 4,506 eligible 10th, 11th, and 12th grade students in the three participating school during the fall 2018 semester, 182 students were enrolled in the semester-long PINS course amounting to only ~4% of students. However, all 7 classes were filled to capacity; the demand for the class at some schools was greater than the number of available class sections, and limited funding was the reason given in IDIs when PINS teachers and trainers, PPS co-teachers, and other school staff were asked why more courses were not being offered, given the demand.

PINS attendance data revealed that percentages of students attending at least 90% of all class sessions was high across the schools: 91% at Cleveland, 89% at Lincoln, and 85% at Madison. Full attendance data for the PINS class disaggregated by subgroup could not be obtained for all PINS classes due to challenges completing timely PPS data requests. However, as indicated in Table 4.1, many marginalized groups were overrepresented in the study sample, which was representative of the classes at large (including non-study participants). Female, gender non-binary, LGBTQ+, POC, non-US-born, low-SES students, and high ACEs students were represented in higher percentages in the PINS class than in participating schools overall. One explanation was offered by a youth MBI expert in an in-depth interview; he explained,

"Mindfulness is the soul seeking to be initiated." When asked probing questions, he responded that youth who enroll in these classes are seeking to be initiated to and discover who they authentically are and what their role is/will be in their communities. This perspective offers one viable explanation as to why students from marginalized groups—who generally receive less structural supports to discover their talents and strengths-based life paths—may disproportionately opt into and benefit from the PINS class.

Fidelity

a) Integrity and Adherence to Curriculum

A total of 7 observations took place across the three schools. Observations consistently showed a high degree of fidelity in delivering curriculum content with 95% or more of the content delivered in five of the seven observations. In these observed classes, teachers made a few oversights, like not prompting students to thank their partner after sharing, but most seemed to be making adaptations, or selective changes, such as eliminating a group discussion session when short on time. The only time there was poor adherence to the curriculum was during a school shooter incident on the day that two of the observations were conducted, which led to less than 5% of the lesson content being delivered that day (see "Participant Experience" below).

b) Quality

Several sub-themes emerged, evidencing that the PINS class was delivered with the quality intended in the program design, and they consistently linked to positive impacts on students: i) teachers who embody mindfulness, ii) the Environment of C.A.R.E. (described below) and creation of community, iii) course depth and duration, and iv) deep tailoring to meet student needs including trauma-informed, culturally-responsive, and equity-based practices.

i) Teachers' Embodied Mindfulness and Relational Skill

Across the FGDs among adolescent participants, the factor most frequently mentioned (>80 times) as a strength of the class and facilitator of learning was the teachers' embodied mindfulness practice, expertise, and relational skill. In FDGs, qualities students said they most valued in teachers fell into 10 categories, including (from most-to-least frequently mentioned): cultivating authentic relationships; embodying mindfulness; caring; compassion; commitment; "chill" and calming presence; equitable relationships; flexibility, leniency and not forcing; a willingness to be vulnerable; and building trust. One student explained:

> *I can actually have more of a relationship with [the teacher] 'cause I don't think of him like he's just here to get paid and it's his job. It is his job, but he's here because he wants to do this [snaps from other students, a practice to show support] like he actually wants to be with us. ...In a lot of my other classes, it's just like I feel the teachers are not that into it.*

Observations underscored the importance of the relational process as foundational for students' ability to connect meaningfully with themselves (their own bodily sensations, thoughts, and emotions), the teachers, other students, and the class material. The teachers used many specific relational techniques, such as reflective listening, modeling transparency and authenticity, maintaining a caring environment, incorporating humor and fun, honoring that participation looks different among students, avoiding making assumptions, emphasizing positive reinforcement, and meeting resistance with non-judgment and curiosity.[622] Rather than emphasizing an authoritarian student-teacher relationship, it appeared that this served as a model, and teachers consistently fostered student-student relationships by having students share in dyads, triads, and small and large groups. All teachers who were observed demonstrated the

qualities and behaviors described above, and many of these were qualities that the organization sought in hiring processes and behaviors fostered in training and ongoing professional mentorship. However, certain teachers were particularly strong at specific elements. For example, one male teacher is particularly well known for modeling transparency, authenticity, and approachability. In an FDG, a student explained:

> *I think the fact that [the PINS teacher] and [PPS co-teacher] share things about their life with us makes you feel like you know them. And I feel like in a lot of my classes I don't really know anything about my teachers [SNAPS], so there's like no incentive for me to share back or do anything. So, the fact that they kind of tell us and can relate to us is really helpful with the whole community-building thing.*

One relational skill students, parents, and school staff consistently noted in the in-depth interviews was teachers' ability to cultivate authentic relationships with students and their willingness to be vulnerable—a practice PINS calls "skillful self-disclosure". As outlined in the PINS Facilitator Manual[623], skillful self-disclosure may include the teacher sharing a personal story or their feelings, explaining why they are doing what they are doing, and being aware of non-verbal self-disclosure. A student at Lincoln explained the impact this has had:

> *I found [the PPS co-teacher] easy to relate to, I guess, just because he talks about his difficulties and troubles dealing with certain types of situations or emotions that are at least a little bit similar to my own. He makes me feel less alone or like part of a group.*

The embodiment of PPS co-teachers, in addition to PINS teachers, was identified as an important fidelity factor. Students noted that a co-teacher failing to embody mindfulness

was a major weakness and a barrier to learning. Across all three schools, most students had positive comments about the PPS co-teachers, and would distinguish between the deeper level of embodiment and skill of PINS teachers compared to PPS co-teachers. However, students at one school and in one specific class section noted how their PPS co-teacher was "very uptight", "naggy", and "passive aggressive", in contrast to the PINS teacher. They concluded, "It doesn't make me not want to come, but it actually kind of ruins it a little bit for me." Exhibiting social-emotional literacy linked to the concept of a 'fixed mindset' versus a 'growth mindset' discussed in the PINS class, a student stated, "[The PINS teacher] seems to really understand when something's going on… And the co-teacher just kind of seems to have a fixed mindset on what her opinion is and then it's like she can't see the other side of some situations..."

Student perspectives on the importance of embodied teaching and relational mindfulness were mirrored by information shared by mindfulness experts in IDIs. Several youth MBI experts explained that their involvement with mindfulness began by discovering mindfulness and its benefits in their own lives, and then becoming teachers from a desire to share the benefits they experienced. All the MBI experts emphasized that embodied practice was foundational to teaching mindfulness.

ii) Environment of CARE and Community

The second most mentioned facilitator of learning in the PINS class (mentioned 47 times in the FDGs with students and IDIs with parents, and PINS and school staff) was the creation of community and the Environment of CARE—an acronym for class agreements: confidentiality, acceptance, reverence (explained by PINS as "respect with a tinge of awe"), and empathy. One student explained:

I really like the idea of the Environment of CARE. It's really helped me be myself. Like I share things I normally wouldn't in front of the class. [snaps]

Several students in the focus groups expressed that they initially doubted the group's ability and willingness to uphold the Environment of CARE and being surprised at how well students honored it, making the room a "safe space" or "brave space" and creating meaningful bonds. A student explained becoming willing to share with more and more vulnerability over time:

It's incredibly difficult to get a group of people together and build this environment with them… It's kind of insane. To think of how many mindfulness periods there are…it's just really admirable, and you can tell that [the teachers] practiced a lot.

Interviews with teachers also revealed a 'tipping point' when classes shift from being acquaintances to having a deeper sense of community. After observing an increase in the frequency and vulnerability of sharing, inside jokes, and open expressions of empathy between students, the researcher inquired with teachers. Teachers reported that after four to six (or up to eight) weeks, deeper familiarity, bonds, and a sense of community usually begin to emerge, and vary by class. The exceptional level of connection among a class with such high diversity, relative to other classes, may itself be a vector for health and wellbeing. Previous research suggests that the greater diversity and connection in a system, the greater its health and well-being, as outlined in the field of Interpersonal Neurobiology (IPNB). The Environment of CARE inherently encourages both diversity and connection.

iii) Curriculum Depth and Course Duration

Teachers, school staff, and youth MBI experts consistently noted the breadth, depth, and duration of the course curriculum in IDIs. Program documents, including evidence-based slide

decks, confirmed that PINS offers 7-12 times more instruction than most school-based MBIs, which average 5 to 8 hours total.[624] Despite this fact, the vast majority of students in FDGs expressed a desire for more class time. Some suggested the class be yearlong versus one semester. Others suggested making the class a "double block", or back-to-back class periods.

Across schools and student groups, five reasons for wanting more class time emerged (1) Across schools, a few students felt the class was rushed at points, and students noticed a great breadth of content but wanted more depth. (2) Across schools, several students also pointed out that trust and community would be even stronger with more time. (3) Several students at Cleveland and Lincoln (where the PINS course is semester-long) wanted to maintain the routine of having a mindful space in their day year-round. (4) Across schools, others felt they might inevitably miss some content or (5) that it may not "stick as long" with only a semester. These recommendations align with evidence-based best practice, which suggests repetition is best for adolescents to learn mindfulness, and this study's findings that class and community cohesion grow over time.[625] However, some students preferred the semester-long option to allow them flexibility to accommodate other classes. The consensus in nearly all FDGs across schools was to have both semester- and yearlong options offered.

iv) Equity-promoting, Trauma-informed, and Culturally Responsive Tailoring

Program tailoring to meet students' needs was another facet of program quality that was consistently discussed in FDGs and IDIs, and seen in class observations, including sensitivity to varied trauma backgrounds, responsiveness to cultural differences, and fostering of equitable student-teacher and student peer relationships. In an FDG, one student at Cleveland explained:

> *It's like a more equal, more equitable relationship than definitely a lot of the teacher-student ones. Even though there are a lot of chill teachers, it's still more of the traditional, like the teacher's dominant and the student is supposed to follow directions or is being controlled by the teacher. And this is more of like a guide, kind of like a mentor helping us and being less of a big authority, scary.*

Engaging in non-authoritarian and "power with" dynamics (vs. "power over/under") was a pedagogical approach imparted in teacher trainings and consistently modeled in the classrooms. This appeared to create a powerful equitable dynamic in classes at all three schools. Equity-promoting practices noted in observations included circle practices, with everyone sitting in a circle at the same physical level, students and teachers; offering different seating options to accommodate physical differences; including pronouns on name tents, to include gender non-binary people who may prefer to be referred to as "they", versus "he" or "she". Additionally, across schools multiple teaching modalities were observed, including auditory, visual, and kinetic—a best practice to cater to diverse learning styles. Teachers also reminded students to be aware of how much time and space their voices took up, encouraging talkative students to make space for others and quieter students to speak up. Many students also expressed appreciating how PINS teachers were willing to consider life circumstances when discussing assignments and grading, which they took as a sign of being more equitable in relationships rather than typical dominant, punitive teaching approaches.

Trauma-informed practice was also identified as a cornerstone of the PINS curriculum and pedagogical approach by PINS teachers and trainers, and youth MBI experts in IDIs. Examples included: creating a physical environment that was calming to the nervous system, including warm lighting, art, and plants; posting and sticking to a consistent

schedule; having clear and visible pathways to classroom exits; students being encouraged to sit with their backs against the wall if they liked (a best-practice for people with PTSD); beginning each class with a mindful minute' for students to center themselves; and allowing students to pass or opt out of any activity. For example, one student explained, "I like the structure, that it's the same each time. I know what's gonna happen when I walk in…It feels ok to *exist*… It feels like I'm able to relax more here." Teachers were also trained to identify and deescalate trauma responses, which are often perceived as problematic or defiant behavior, and embody empathy when students were feeling triggered. Two teachers were always available, allowing one teacher to step out with a student who was having a hard day or was triggered, while the other teacher continued guiding the class.

Class content and teacher selection was also infused with an evidence-based understanding of trauma. The curriculum included several lessons aimed at educating students about and destigmatizing trauma. For example, one series of lessons, "How We Survived Our Lives", describes how an (often traumatic) event can lead to an unmet need, featuring short-term coping mechanisms that often become unhealthy or dysfunctional survival strategies in the long-term, shaping thoughts, feelings, and behaviors. Class content helped students build foundational skills to anchor to the present, moving them from common trauma responses such as future-focused anxiety or rumination linked to PTSD and depression. Core skills in the curriculum included: directing the attention to sensations in the body, feelings, and thoughts; being with and working through challenging feelings; identifying self-talk (inner monologue) that is often negative and derived from trauma; and practices on compassion, balance, and coming back to center. During moments of "skillful self-disclosure", it became clear that at least a third of the PINS teachers across all schools

had struggled with trauma or some type of mental health issue in their past, and they shared how they had used mindfulness practices to manage challenges with anxiety, depression, negative self-talk, and trauma. IDIs further revealed that one consideration for teacher selection was that teacher's embodied practice in applying mindfulness to their own challenges, including but not limited to trauma.

Culturally responsive pedagogy was also an explicit part of PINS teacher training, curriculum, and observed practices. Examples included class discussion prompts that addressed culture, family, language, traditions, and an appreciation of differences. For example, while observing a class on the topic of intimacy, a teacher prompted group discussion, saying, "You probably have a pretty regular space around yourself. Where did you learn that? This differs a lot by culture or location, for example, in a New York City subway, a village, with family, at school."

In this same lesson, the teacher engaged the students in discussing different cultural norms around eye contact, social interaction, and personal space. The teachers also demonstrated and openly acknowledged awareness of their positionality, such as naming their being from certain racial, class, or sexual orientation groups and the power and privilege, or lack thereof, associated with their identities. These best practices in RESJB work created a space where students could also explore and acknowledge cultural norms, similarities and differences, and the influence of power and privilege in shaping individual and collective beliefs and behaviors. Finally, cultural responsivity was also demonstrated at one school where the teachers were working with a PPS translator who often sat in their classes to offer real-time English-Spanish translation of the PINS curriculum and materials.

c) Participant Experience

Several sub-themes of participant experience emerged in FDGs, observations, and field notes such as reviewing journal entries, PINS videos, and class activity materials, including: i) reasons for enrolling in Mindful Studies, ii) perceived benefits of the class, and iii) weaknesses and suggested improvements, and iv) real-world applications of mindfulness.

i) Reasons for Enrolling in PINS

FDGs revealed three main categories of reasons why students took the class, each representing about a third of the reasons given: a recommendation, general interest and/or to improve wellbeing, and academic considerations. Recommendations for the course, a compelling motivator for many students to enroll in the course, came from varied sources, such as a friend, sibling or other family member, school counselor, therapist, coach, or sports teammate. Others reported having an interest in mindfulness, self-care, or improving well-being or mental health. Several students mentioned academic reasons for joining the class: wanting a break in their schedule or balancing a heavy course load, believing it fulfilled a physical education (PE) requirement (which it does not), because they heard it was "an easy A" or that they could sleep in the class, or taking it as a backup or unplanned class. Several students described taking the class as "a happy accident." Others initially believed it was an "unhappy accident" but opted to stay in the class after experiencing benefits. A student at Madison explained why they chose to continue the class after learning that it did not fulfill a PE requirement, their reason for enrolling: "I still had a chance to transfer out, but I was like, 'Okay, I like the vibe in here.' …Usually I stress every year about my grades, and then when it comes to being in this classroom, it's just like… just being, just loving yourself in a way."

ii) Perceived Benefits

Students cited numerous benefits of the class, and no students openly expressed overall dislike of the class or reported experiencing that they or other students saw no benefits. Many students said they had chosen to repeat the class or planned to take it again in the future due to the benefits they had experienced. Students and other stakeholders, including parents, teachers, and school staff, also shared numerous benefits they observed in students' lives as a result of participating in the program (with number of times mentioned in student FDGs noted):

- *Improved mental health* (21), including help with anxiety and worry, disidentifying or not getting so consumed by or hooked on thoughts, letting go of things that happened in the past, PTSD, ADHD, and panic attacks. One student said it had "the benefits of therapy without the stigma", and others noted that it provided an opportunity to learn about mental illness through others as students shared their experiences.
- *Experiencing calm, happiness, relaxation, and having an opportunity to de-stress* (16)
- *Improved self-relationship* (16), including "figuring out who I am", less self-consciousness, learning to be one's authentic and best self, self-acceptance, and self-care.
- *Improved relationships with others* (15), including enhanced compassion; ability to support others; openness, vulnerability, and willingness to share with others; acceptance and ability to have meaningful interaction with "people different from me".
- *School and sports performance* (14), including feeling more motivated to attend school, improved grades, better ability to manage school and academic stress, and using mindfulness tools for sports competition.
- *Self-management tools* (13), including the ability to manage anger and stress.
- *Gaining tools to use in daily life outside the classroom.* (12) One student explained using the 'anchors', a tool to anchor awareness to the present: "You don't have to meditate, but

just focusing in a stressful situation, or *any* situation really, and just hearing the sound of the outside, or focusing on your breath or something like that Just the fact that you can use these things that are always around you to sort of calm down and realize that it's okay, and you can just take a step back for a little bit. That's also been helpful to me." Others mentioned how class practices helped them take perspective and sleep better.

- *Increased motivation to go to school and participate in class* (12) was another noted benefit of grading being linked to genuine effort in class. Several students commented that because there was less forcing and requirements, they felt more motivated to participate and engage. One student said, "About my attendance or whatever, I've missed Spanish like ten times, and I've never missed this class. Even if I was sick, I would come to this class, or I've scheduled appointments, so I don't have to miss this class. It's my favorite class, and as much as is in my power I won't miss it."

Other benefits mentioned (<10 times) were the ability to take a break, rest or slow down; be in the present moment; building trust with others; and positive multilevel benefits seen among peers, families, or the school as ripple effects from interaction with those taking the class. IDIs with parents revealed that most were pleased with changes they saw in their child's behaviors and positive comments they made about the class, but several admitted they did not fully understand how or why these benefits were taking place. One parent said, "I'm not sure exactly what they're doing in that class, but I used to not really have a relationship with my daughter. She's had really bad anxiety. But now she comes home and does her work. She decorated her room and made a meditation area. Whatever the class is doing, it's having a positive impact." Another parent said, "I believe the Mindful Studies class should be available in every high school in the US." A third parent was so moved by insights his son was sharing at the dinner

table—specifically the realization that "I am not my thoughts"—that his son's and daughter's experiences in the class catalyzed the parent's personal embarkation into mindfulness practice, which led to him serving on the PINS Board and becoming a vocal PINS advocate.

When asked who should take the class in FDGs, students consistently said, "Everyone!" The reasons given included helping people reduce their focus on the future and increase acceptance. Most suggested it is best for high school students. One student said, "I think it's probably best for a high school level because I don't know if adults or like elementary schoolers would like take it seriously." Others suggested children and adults should take it, especially teachers and school staff. A student at Cleveland explained, "…Some teachers don't have any chill, and they need to learn how to relax. [Laughter and snaps from students]" Teachers, parents, and youth MBI experts also frequently expressed that mindfulness could benefit children, teens, parents, teachers, and school staff. Many parents commented that they wished the class were available to all students who wanted to take it. A mother explained, "I wish it were available to all students…because having balanced mental health is so important for high schoolers."

A mindfulness expert who works with incarcerated youth said he believes all youth and adults can benefit from mindfulness, and that what it offers meets a universal relational need:

> *I believe that presence is actually a form of love. In fact, some people would say it's the highest form of love: to be fully present. For someone to be fully present with you, fully, is what many of us wanted when we were younger, but never got. I would say that is a universal need. Both to receive that and also to share it with the world.*

However, several experts cautioned that some youth are not "ready" to receive mindfulness teachings—arriving at similar conclusions to youth who agreed the class should remain elective.

Finally, some of the benefits noted supported quantitative findings from Aim 2, such as demonstrated increases in self-compassion, perspective taking, and emotion regulation; this data triangulation supports conclusions drawn there. For example, increases in self-compassion tied to specific PINS teachings were found in qualitative data gathered from program documents, such as this excerpt in a letter students write to themselves that are delivered to them a year after they are written:

> *Hey Nerd, It's me, ya boi. I'm you, writing to you, from your past. Just wanted to pop by and see how you're doing. Found a place to be, new reasons to live, or some meaning in your life? If not, that's okay. No matter where you go, what you do, or who you become, you'll always find something beautiful, and something different. Remember the story of the clay statue, and don't forget that you're made of gold.*
> *~Male student*

This quote evidences a student's ability to express self-compassion using a story from the PINS curriculum, the clay statue. The story recounts how a gold statue was covered in clay, hiding its true value, which was later revealed. The story is used to teach students how conditioned beliefs also often lead us to hide our authentic selves, but that our inherent worth is always there and mindfulness tools and techniques can help us access them and live with greater authenticity, self-compassion, and sense of self-worth.

In another example, a student's words illustrate their application of perspective taking, emotion regulation, and self-compassion applied to anxiety and depression symptoms, which offers a qualitative complement to statistical findings:

> *I'm laying in mindfulness writing myself this letter. A love letter. Right now I've been struggling more than usual. My anxiety and depression have spiked and I'm working towards feeling more stable. I know that these feelings are temporary, and I'm strong and that things will get better. I just have to get there. I'm already starting to feel better. I hope you now feel genuine happiness because you are amazing. I know you will get sad or anxious sometimes, but that's okay. Being unhappy is okay, it only makes the good times better. Life will always be up and down, and I know you are capable of it all. Your schoolwork doesn't define you. Your past doesn't define you. Just keep working to be the best version of yourself. You will find your thing. You will be successful. I have hope. I believe and have so much faith in you. You are going to do some amazing things and go so far in life. Have fun along the way. You deserve fun. ~Gender non-binary student*

iii) Weaknesses, Challenges, and Suggested Improvements

Fewer weaknesses and areas for improvement were identified by students in FDGs compared to strengths and benefits. However, several areas for growth and recommendations were offered. Weaknesses fell into three categories, including the teachers—particularly the ways in which one PPS co-teacher engaged with students in ways that felt unmindful and authoritarian; barriers to taking the course; and challenges using the tools. At one of the schools, a specific co-teacher was described as having "a fixed mindset" and "overly harsh discipline"; being "nosy", invasive", "naggy", and "passive aggressive", and breeching confidentiality. This

seemed to be unique to this specific class and co-teacher, but students reported this damaging trust and, for some, ruining their experience of the class. Another comment heard by a few students across schools was that the option to say "pass" and not share their feelings should always be honored. Other suggestions, which were distributed evenly across classes and schools, unless otherwise indicated, included (with number of times mentioned in student FDGs noted):

- *Elements of the class design, or how the class is delivered* (24), including suggestions about content such as teaching fewer concepts more in-depth, making the class less linear (e.g., repeating certain concepts and circling back to deepen understanding of concepts rather than going from topic A, to B, to C without repetition or reiteration), offering more days when students get to choose the kind of mindfulness activity they want to do, longer guided meditations, and incorporating more creative practices. Creative practices suggested included a greater range of mindful movement activities, mindful art, mindful music, activities in nature, and more opportunities to do personal retreats at Dharma Rain, a nearby monastery. Other practices outlined by an MBI expert includes trauma-releasing body movements, such as yawning, stomping, coughing, sighing, humming, singing, writing, drawing and coloring, storytelling, and mindful speaking and listening, shaking, growling, dancing, yelling, or other enactment of physical release in service of healing.[626] Some students also voiced suggestions that constitute additional trauma-informed best practices: allowing students to choose their partner in dyad activities, not using the Socratic method to call on students, allowing students to opt out of physical activities when physical contact with other students is required, offering more teaching outside or walking meditation, and allowing students to choose how and where they sit during class.

- *Class space and equipment* (21) included wanting more and nicer spaces with less noise transference; better temperature control in the room; softer lighting; and more regularly cleaning of the classrooms—including one student who suggested adding a cleaning mindful minute to end class. Students also issued requests for journals that are less flimsy and clipboards or mini desks for writing since students often sit on the floor. These recommendations were voiced consistently across schools and classes; the recommendation to offer a cleaning mindful minute was only mentions at Madison HS.
- *Greater variety of class activities and content* (19), particularly making the activities more interactive. These recommendations, which came from across the three schools, included acting out scenarios and apply mindfulness tools, more opportunities to share how students are using class tools in their lives, and more community- and trust-building activities. Student across schools said that they would like less or no journal work, and students from Madison HS said they would like to visit the Dharma Rain retreat center (where the Madison classes do a mini-retreat as a final project) more often, even weekly.
- *Quantity, frequency, duration, and types of activities* (16), including requests to offer more classes and not restrict access due to demand, semester- and yearlong classes, and 'double block' classes or allowing students to take back-to-back periods.
- *Whether or not the class is required* (13). Students nearly unanimously said that Mindful Studies should remain an elective and shared that making it required would "destroy the Environment of CARE", reduced some people's comfort level in the class, and may lead people who did not want to be there to be disrespectful. They affirmed this, even while ubiquitously recognizing that most or all students and people could benefit from the class.

Additional recommendations (mentioned <10 times) included the need for PINS to do a better job informing students about the class, such as providing more effective presentations that feature students sharing about their experiences, improving the class description in the class guide, and strengthening the information provided during class forecasting/sign-up periods. A few suggestions were also made to make Mindful Studies fulfill a PE or health requirement and to make sure that the PPS co-teacher was "on the same level" as the PINS teacher, including them having a deep mindfulness practice.

iv) Real-world Application of Mindfulness

Praxis was also an element of the PINS class that evidenced the quality of the class. Students were encouraged to implement formal and informal mindfulness practices into their daily lives. This included daily meditation and mindful movement practices, journaling on their own life experiences, applying concepts they were learning, and small and large group discussions about their attempts to integrate the material into their lives. During FDGs, students cited numerous ways in which they were applying mindfulness in their daily lives, such as working through anger when their GPS was not working or when in conflict with a friend or family member; navigating anxiety and unpleasant feelings around school, sports, or with challenging coworkers; using breathing techniques to calm down in stressful personal and academic situations; practicing gratitude; and improving communication with family members through reflective listening and perspective-taking. The opportunities inside and outside of class to apply learning was yet another indicator of high program quality.

Mini Case Study: School Shooter Incident

One particularly poignant example of the real-world applications of PINS mindfulness teachings applied in a real-world situation happened when a school shooter incident occurred during a classroom observation. What was believed to be a "Shooter Lockdown Protocol" drill turned out to be a true incident with armed shooters outside the building that lasted over two hours. Students demonstrated a range of responses from shutting down, to extreme anxiety, to texting family members goodbye. Throughout the incident, the PINS teacher skillfully led the class through seven mindfulness techniques: (a) resting in present moment awareness; (b) choosing a meditation technique: anchoring into the breath, sounds or body sensations, counting the breath, or using 'floss breath'; (c) noticing if the mind wanders and bringing it back to the present moment; (d) recognizing self-talk and remembering "you are not your thoughts"; (e) observing conditioned responses to run or avoid present reality rather than "just being with what is"; (f) practicing unconditionally loving reassurances; (g) offering a guided visualization that included a body scan. As two shooters were being apprehended outside the school building, most students took the opportunity to turn inward, taking refuge in presence, breath, or the visualization. Calmly, the teacher said, "Whatever is happening on the outside or on the inside, we're most able to meet it by being present." Ultimately two shooters were apprehended outside of the school building.

Students came into the class period following the shooter incident terribly upset. One student left, another was not sure about coming into the room because of their anxiety, and a couple students discussed having to use the bathroom so badly during the incident that they planned to urinate into a bucket. The teachers led an opening "mindful minute" and then students shared reflections on their experience during the incident. It

appeared that due to the Environment of CARE established in the classroom, students were able to openly share. One student said they kept thinking about how badly it would hurt to be shot, another spoke about fear for other people, and others described feeling queasy, stressed, or tired. Some students said the incident was not a big deal because gun violence is common in their community. Using best practices to calm the nervous system in response to stress, the teachers led mindful movement, meditation, breathing and other mindfulness exercises for the rest of the class. This observation raised significant questions about broader real-world applications of using mindfulness in schools with students, as well as teachers, administrators, and other school staff for crisis response.

Contextual Factors

Several contextual factors influencing the class emerged throughout the process evaluation, primarily concerns about apparent limited support and funding provided by PPS. Several students made comments like, "Oh, the school doesn't care about us" or, "You can *tell* that the school doesn't care about this class" during FDGs. When asked to elaborate, they cited inadequate or suboptimal spaces provided, limited class sections despite demand for the class, and the assignment of PPS co-teachers that did not always seem to be interested in mindfulness. Some students also commented on school counselors or administrators not sharing information about the class. One student explained:

> *I mean Peace in Schools is sort of a separate organization, and I feel that this class isn't highlighted as much as it should be, and that it's kind of left up to the students. And that's just like… I mean having to think about how much good this program could do around the country, so that they grew up having the option to do this class. (original emphasis)*

Several students also commented that their school administrations' hyper focus on productivity, performance, and punishment to motivate students to be in class was ineffective. One student suggested they use the PINS approach to use reward-based incentivization to get students to go to class: "It draws people in, and people want to go because it's so beneficial to their daily life. And the principal is just like, 'Well if you skip, we're going to punish you.' And it's like, 'No!'"

Aim 2

Change in Adolescent Neurocognitive, Psychological, and Social Health Outcomes, Differences by Subgroup, and Moderation Effects

In Aim 2, mean change for a series of 12 neurocognitive, psychological, and social health outcomes was examined. In addition, subgroup analysis was conducted to determine differences in outcome by school, grade, gender, sexual orientation, race/ethnicity, nativity, and SES. Finally, ACEs, class dose, and TTM stage of readiness for change were examined for moderation effects, as they were hypothesized to lead to greater mean change. These variables, described in detail in Chapter 3, were informed by the literature and reflected in the conceptual framework.

Mean Outcome Changes

As seen in Table 2, significant pre-to-post changes were reported in four of eight psychological outcomes across the sample, including an 11.49% increase in self-compassion ($p<.001$), 12.23% increase in approach coping ($p<.05$), 8.29% reduction in expression suppression (or improved emotion regulation; $p<.05$), and 13.61% reduction in anxiety symptoms ($p<.05$). Additionally, subgroups reported significant changes in the remaining four psychological outcomes where sample-wide changes were not observed: perceived stress, cognitive reappraisal, depression symptoms index, and self-harm. Counter to hypotheses, no statistically significant changes were reported in neurocognitive or social outcomes across the

full sample; however, several subgroups reported significant change in three of four of these outcomes. These are detailed below.

Table 4.2 Summary of Pre- and Post-intervention Means by Focal Area and Outcome

Outcome (n, measure)	**n**	**Pre Mean**	**Post Mean**	**Change: Mean (se)**	**% Change from Pre Mean**	**p-value**
Neurocognitive						
Behavioral Regulation (89, BRIEF2 subscale)	89	20.08	19.82	-.26 (.43)	-1.29%	0.550^
Emotion Regulation (90, BRIEF2 subscale)	90	26.01	25.24	-.77 (.57)	2.19%	0.182^
Psychological						
Self-Compassion (87, SS short)	87	2.61	2.91	.30 (.08)	11.49%	<.001***
Perceived Stress (88, PSS)	88	23.28	22.06	-1.23 (.90)	-5.28%	0.179^
Expression Suppression (86, ERQ subscale)	86	4.10	3.76	-.34 (.15)	-8.29%	<.05*
Cognitive Reappraisal (88, ERQ subscale)	88	4.26	4.48	.23 (.16)	5.40%	0.168^
Approach Coping (87, Brief COPE)	87	27.63	31.01	3.38 (.97)	12.23%	<.001***
Anxiety Symptoms (89, GAD-7)	89	1.47	1.27	-.20 (.09)	-13.61%	<.05*
Depression Symptoms Index (89, GEAS)	89	6.79	6.31	-.47 (.30)	-6.92%	0.118^
Self-harm Question (82, GEAS)	82	.51	.46	-.05 (.10)	-9.80%	0.614^
Social						
Social Competence (87, SC for Teens)	87	24.20	24.03	-.17 (.55)	-0.70%	0.755
Social Connectedness Scale (87, SCS Rev.)	87	32.23	32.03	-.20 (1.44)	-0.62%	0.892^

**p<0.05 **p<0.01 ***p<0.001 | ES effect size, SE is standard error*
^ One or more subgroups examined had statistically significant results

Subgroup Analysis

Subgroup analysis results indicated that mostly marginalized groups, but also some non-marginalized groups, reported benefits beyond their peers, largely in predicted directions. (Summarized in Table 4.3 and outlined in detail in 12 tables in Appendix H.) For five focal outcomes chosen for their public health importance (shown in Table 4.3), significant improvements were reported by female, gender non-binary, LGBTQ+, and low-SES students, who often caught up to or surpassed non-marginalized peers. Heterosexual, non-low-SES, and US-born students also experienced some significant effects. Conclusions drawn about subgroups should be tempered for subsample sizes that are small (<25). Results below discuss the subgroup(s) referenced compared to the overall subsample (the first row, "Total", in Table 4.3). Outcomes were assessed at three significance levels: p<.05, p<.01, and p<.001.

Effect of Intervention by School and Grade

Greater significant outcome changes were reported at one school compared to the study subsample in three areas: an increase self-compassion at Cleveland (12.01%, $p<.05$), and an increase in coping (20.25%, $p<.05$) and reduction in anxiety symptoms (-30.00%, $p<.05$) at Madison HS. One of three sections at Cleveland HS had a co-teacher that many students commented having issues with in the FDG. This may have impacted study results, such as reduced self-compassion among black students, since several students of color and black students voiced concerns about bias and heavy-handed punishments of this co-teacher. The shared experience within the classes who experienced the school shooting at Madison HS also appeared to increase the sense of community and class closeness as a result, and may help to explain greater outcome changes in certain areas (e.g., coping and reduced anxiety symptoms). *Across* schools, 10th grade students reported more significant changes than older peers, including nearly double the increase in self-compassion (21.18%, $p<.01$), greater reductions in expression suppression (-14.17%, $p<.05$), and more than triple the reduction in depression symptoms (-23.47%, $p<.05$) versus the total sample (-6.92%, $p>.05$/non-significant).

Effect of Intervention by Gender and Sexual Orientation

Females, LGBTQ+ and heterosexual students reported significant improvements in many outcome areas. Females reported significant increases in self-compassion (19.12%, $p<.001$) and approach coping (18.91%, $p<.001$), and decreases in expression suppression (-10.63%, $p<.05$) or improved emotion regulation, anxiety symptoms (-17.75%, $p<.01$), and depression symptoms (-12.75%, $p<.01$). Male and gender non-binary students reported changes across the five focal outcomes, but most were not statistically significant, which may have been linked to the small subsample sizes and the ability to only detect large effect sizes. LGBTQ+ students reported significant effects beyond heterosexual peers for four outcomes: self-compassion (13.68%,

Table 4.3 Subgroup Analysis Summary for Outcomes of Interest															
	Self-compassion			**Emotion Regulation –** Expression Suppression			**Coping Skills –** Approach Coping			**Anxiety Symptoms**			**Depression Index**		
Subgroups	**n**	**Change: Mean (se)**	**% Change from Pre**	**n**	**Change: Mean (se)**	**% Change from Pre**	**n**	**Change: Mean (se)**	**% Change from Pre**	**n**	**Change: Mean (se)**	**% Change from Pre**	**n**	**Change: Mean (se)**	**% Change from Pre**
Total	**87**	**.30 (.08)**	**11.49%*** **	**86**	**-.34 (.15)**	**-8.29%***	**87**	**3.38 (.97)**	**12.23%*** **	**89**	**-.20 (.09)**	**-13.61%***	**89**	**-.47 (.30)**	**-6.92%**
School															
Cleveland	37	.34 (.13)	12.01*	37	-.30 (.21)	-8.02%	38	2.79 (1.26)	9.64%	37	-.03 (.10)	-2.36%	37	-.65 (.55)	-10.02%
Lincoln	28	.23 (.16)	9.75	26	-.32 (.27)	-7.26%	28	2.68 (1.56)	10.21%	28	-.20 (.17)	-12.27%	28	.07 (.48)	0.99%
Madison	22	.32 (.16)	12.50	23	-.42 (.32)	-9.72%	21	5.38 (2.00)	20.25%*	24	-.48 (.19)	-30.00%*	24	-.83 (.46)	-11.93%
Grade															
10th	19	.54 (.15)	21.18**	17	-.59 (.27)	-14.71%*	19	2.74 (2.24)	9.79%	19	-.30 (.11)	-17.75%	19	-1.84 (.56)	-23.47%*
11th	36	.18 (.11)	6.77	37	-.19 (.24)	-4.74%	36	4.19 (1.34)	15.78%**	37	.03 (.14)	2.94%	39	.03 (.33)	0.49%
12th	32	.30 (.16)	11.58	32	-.38 (.24)	-8.96%	32	2.84 (1.73)	9.92%	33	-.71 (.37)	-32.72%	31	-.26 (.64)	-3.75%
Gender															
Female	47	.48 (.11)	19.12***	46	-.42 (.20)	-10.63%*	46	5.15 (1.31)	18.91%***	48	-.30 (.11)	-	49	-.90 (.33)	12.57%**
Male	33	.11 (.13)	3.89	33	-.23 (.23)	-5.28%	33	2.03 (1.47)	7.35%	33	.03 (.14)	17.75%**	33	.30 (.62)	5.16%
Non-binary	7	0 (.36)	0.00	7	-.25 (.57)	-6.48%	8	-1.25 (3.80)	4.19%	8	-.71 (.37)	2.94%	7	-1.14 (.51)	-13.09%
												-32.72%			
Sexual Orientation															
Heterosexual	58	.29 (.10)	10.58**	58	-.19 (.17)	-4.77%	60	4.03 (1.27)	14.89%**	60	-.10 (.10)	-7.87%	60	-.07 (.36)	-1.14%
LGBTQ+	29	.32 (.15)	13.68*	28	-.64 (.27)	-14.71%*	27	1.93 (1.30)	6.68%	29	-.42 (.16)	-22.22%*	29	-1.31 (.52)	-16.17%*
Race/Ethnicity															
White	54	.40 (.11)	15.63***	53	-.42 (.16)	-10.42%*	53	3.75 (1.23)	13.31%**	53	-.24 (.12)	-16.22%*	53	-.68 (.37)	-10.10%
Asian	7	-.05 (.36)	-1.74	6	-.04 (.81)	-0.95%	7	6 (3.18)	23.59%	7	.18 (.20)	12.77%	7	-.14 (1.64)	-1.96%
Black	4	-.61 (.19)	-19.74%*	5	-.6 (.86)	-15.79%	5	-2.4 (5.10)	-8.16%	5	-.26 (.32)	-18.98%	5	1.4 (1.08)	25.00%
Latino	4	.39 (.50)	15.48%	4	-.69 (.98)	-14.53%	5	7.4 (5.91)	34.58%	5	-.2 (.46)	-13.99%	5	-1.6 (1.29)	-20.00%
Multiracial	17		10.89%	17	.11 (.30)	2.61%	16	1.81 (1.84)	6.67%	18	-.16 (.17)	-10.96%	18	0 (.59)	0.00%
No answer	1		49.80%	1	-2.5 (--)	-62.50%	1	1 (--)	2.22%	1	-1.43 (--)	-58.85%	1	-4 (--)	--
Nativity															
US-born	72	.31 (.09)	11.79%***	73	-.35 (.03)	-8.71%*	71	3.37 (1.06)	12.21%**	73	-.18 (.09)	-13.04%*	73	-.47 (.32)	-7.08%
Non-US-born	14	.30 (.28)	11.76%	14	-.44 (.46)	-9.95%	15	3.4 (2.57)	11.86%	15	-.4 (.24)	-20.94%	15	-.47 (.83)	-6.53%
No answer	1	-.63 (--)	-34.62%	1	1.75 (--)	33.33%	1	1 (--)	7.14%	1	1 (--)	50.00%	1	-1 (--)	-9.09%
SES															
Not low-SES	56	.34 (.10)	12.88%**	56	-.34 (.17)	-8.67%*	56	3.14 (1.16)	11.15%**	55	-.17 (.11)	-12.69%	56	-.39 (.36)	-6.04%
Low-SES	31	.24 (.14)	9.45%	30	-.32 (.28)	-7.21%	31	3.81 (1.75)	14.28%*	34	-.27 (.14)	-15.98%	33	-.61 (.53)	-8.32%

**p<0.05 **p<0.01 ***p<0.001 | se is standard error for mean change*

Table 4.3 (continued). Subgroup/Moderation Analysis Summary for Outcomes of Interest															
	Self-compassion			**Emotion Regulation –** Expression Suppression			**Coping Skills –** Approach Coping			**Anxiety Symptoms**			**Depression Index**		
Potential Moderators	**n**	**Change: Mean (se)**	**% Change from Pre**	**n**	**Change: Mean (se)**	**% Change from Pre**	**n**	**Change: Mean (se)**	**% Change from Pre**	**n**	**Change: Mean (se)**	**% Change from Pre**	**n**	**Change: Mean (se)**	**% Change from Pre**
Total	**87**	**.30 (.08)**	**11.49%*** **	**86**	**-.34 (.15)**	**-8.29%***	**87**	**3.38 (.97)**	**12.23%*** **	**89**	**-.20 (.09)**	**-13.61%***	**89**	**-.47 (.30)**	**-6.92%**
Standard ACEs															
0 ACES	20	.24 (.17)	8.76%	20	-.01 (.30)	-0.30%	20	.15 (2.24)	0.49%	20	-.14 (.23)	-12.28%	6	-.45 (.61)	-5.77%
1-3 ACEs	34	.36 (.14)	13.58%*	35	-.51 (.26)	-12.09%	34	3.41 (1.59)	12.47%*	34	.11 (.21)	8.09%	33	-.49 (.59)	-5.93%
4-10 ACEs	32	.26 (.13)	10.57%	30	-.32 (.21)	-7.22%	32	5.19 (1.54)	20.05%**	34	-.62 (.19)	-34.44%**	31	-.48 (.66)	-5.26%
No Answer	1	.64 (--)	20.13%	1	-1 (--)	-20.00%	1	9 (--)	25.71%	1	2 (--)	200.00%	1	-7 (--)	-70.00%
Expanded ACEs															
0 ACEs	6	.38 (.36)	13.62%	6	-.25 (.65)	-8.56%	6	.5 (5.81)	1.48%	6	.07 (.24)	5.79%	6	-2.33 (.80)	-24.97%*
1-3 ACEs	33	.33 (.12)	12.50%*	33	-.21 (.23)	-5.57%	29	2.14 (1.53)	7.57%	33	-.02 (.20)	-1.79%	33	-.15 (.47)	-1.96%
4-7 ACEs	30	.18 (.15)	6.74%	29	-.28 (.27)	-6.51%	28	4.29 (1.85)	16.08%*	30	.05 (.20)	3.42%	31	-.19 (.73)	-2.23%
8-14 ACEs	17	.41 (.22)	17.60%	17	-.67 (.30)	-14.11%*	23	4.35 (1.87)	16.71%*	19	-1.13 (.25)	-50.90%***	18	-.94 (.91)	-9.72%
No answer	1	.64 (--)	20.13%	1	1 (--)	20.00%	1	9 (--)	25.71%	1	2 (--)	200.00%	1	-7 (--)	-70.00%
Readiness for Change Stage															
Precontempl.	21	.06 (.16)	2.19%	21	0 (.37)	0.00%	21	1.90 (1.73)	7.46%	22	.12 (.22)	9.84%	22	-.09 (.66)	-1.34%
Contemplation	55	.28 (.10)	10.65%**	54	-.32 (.17)	-7.90%	55	3.96 (1.34)	14.16%*	55	-.27 (.08)	-19.01%**	55	-.45 (.35)	-6.82%
Preparation	9	1.13 (.21)	50.67%***	9	-1.14 (.31)	-	9	4.22 (2.01)	13.23%	9	-.71 (.37)	-31.70%	9	-1.44 (1.24)	-19.35%
No answer	2	-.18 (.18)	-7.93%	2	-.46 (.21)	27.71%** -9.06%	2	-1 (2)	-4.55%	3	.13 (.37)	6.60%	3	-.67 (1.45)	-7.73%
Class Dose															
1 time	76	.30 (.09)	11.58**	75	-.37 (.16)	-9.02%	76	3.29 (1.02)	11.77%**	78	-.22 (.09)	-14.67%*	78	-.33 (.32)	-4.84%
2+ times	11	.29 (.25)	10.58	11	-.11 (.32)	-2.70%	11	4 (3.11)	9.92%	11	.10 (.24)	7.69%	11	-1.45 (.71)	-12.14%

**p<0.05 **p<0.01 ***p<0.001 | se is standard error for mean change*

p<.05), expression suppression (-14.71%, p<.05), anxiety (-22.22%, p<.05), and depression (-16.17%, p<.05). On the Depression Index, LGBTQ+ students also reported a significant reduction in thoughts of self-harm (-44.83%, p<.01) more than four times the study sample overall (-9.80%, p>.05/non-significant). (See Table 4.3 for a summary table and Appendix H for detailed tables.) Additionally, heterosexual students reported significant increases in self-compassion (10.58%, p<.01) and approach coping (14.89%, p<.01).

Some significant findings also emerged in non-focal outcomes. Females reported a significant reduction in perceived stress (-10.55%, p<.05) double the non-significant change across the sample (-5.28%, p>.05/non-significant; See Appendix H, Table 4), in accordance with predictions. Similarly, gender non-binary students reported significant improvement on the Cognitive Reappraisal ERQ subscale (30.45%, p<.05), six times the non-significant mean change across the subsample (5.40%, p>.05). (See Appendix H, Table 6.) Additionally, counter to hypotheses, females (-6.51, p<.05) and LGBTQ+ (-8.83%, p<.05) students reported a significant reduction on the ERI/emotion regulation BRIEF2 Subscale. (See Appendix H, Table 2.) However, conclusions drawn from PSS and ERI subscales should be tempered given that these scales were designed to measure one latent concept, but PCA and EFA analysis revealed that there were two and three underlying concepts, respectively. This indicates that these scales may be measuring more than they were intended to and may not be appropriate for this study population/data set.

Effect of Intervention by Race/Ethnicity, Nativity, and SES

Findings by race/ethnicity, nativity, and SES were mixed and often not as predicted. Non-white, non-US-born, and low-SES students did not report greater significant effects across the focal outcomes, counter to predictions. (See Table 4.3) Instead, US-born students reported

significant improvements for four focal outcomes, including self-compassion (11.79%, p<.001), expression suppression (-8.71%, p<.05), approach coping (12.21%, p<.001), and anxiety (-13.04%, p<.05). White students also experienced a significant decrease in thoughts of self-harm on the Depression Index (-42.59%, p<.05). In one area, as predicted, low-SES students reported significant effects (14.28%, p<.05) beyond non-low-SES peers in coping, while non-low SES students reported significant improvements in self-compassion (12.88%, p<.01), expression suppression (-8.67%, p<.05), and approach coping (11.15%, p<.01). Lastly, counter to predictions, black students (n=4) reported a significant decrease in self-compassion (-19.74%, p<.05); however, this subsample size was small and missing students who identified as multiracial and are black.

Moderation Effects: Class Dose, ACEs, and Readiness for Change

Three variables were examined for moderation effects: class dose, ACEs level, and TTM stage of readiness for change at the class outset. These variables were expected to affect the direction and strength of the relationship between the PINS Mindful Studies class intervention and key health outcomes. Class dose was found to moderate the impact of the class on health outcomes, but counter to predictions that outcome changes would be greater in students repeating the class. Instead, there were significant increases in self-compassion (11.58%, p<.01) and approach coping (11.77%, p<.01), and reductions in anxiety symptoms (-14.75%, p<.05) for first-time students. However, there were no significant differences in outcomes for students repeating the class in any of the focal outcomes. An additional unexpected finding was a significant reduction in behavior regulation, a non-focal outcome, in students repeating the class (17.73%, p<.05; n=11).

ACEs exposure was found to be a moderator associated with significant differences in all five focal outcomes. Students with 1-3 ACEs reported significantly increased self-compassion on the traditional (13.58%, $p<.05$) and expanded ACEs (12.50%, $p<.05$) scales, while no other group changed significantly. Students with 4-7 and 8-14 ACEs reported significant improvement in approach coping, including students with 4-10 standard ACEs (20.05%, $p<.01$), 4-7 expanded ACEs (16.08%, $p<.05$), and 8-14 expanded ACEs (16.71%, $p<.05$). The highest-ACEs students with 8-14 ACEs reported significantly reduced expression suppression (-14.11%, $p<.05$) and reduction in anxiety symptoms (-50.90%, $p<.001$) over three times the study sample. Students with 4-10 traditional ACEs also reported anxiety symptoms reducing by over a third (-34.44%, $p<.01$). Students with no ACEs also reported a significant reduction in depression symptoms (-24.97%, $p<.05$) that was four times the total study sample (-6.92%, $p>.05$), indicating benefits for students without ACEs/trauma in this outcome area. Significant differences were also reported for non-focal outcomes. Reductions in perceived stress were also found among students with 4-10 standard ACEs (-23.52%, $p<.001$) and 8-14 expanded ACEs (33.81%, $p<.001$). Similarly, improved cognitive reappraisal was reported by students with 4-10 standard ACEs (20.04%, $p<.05$) and 8-14 ACEs (29.60%, $p<.05$). However, counter to predictions, students with no ACEs reported a reduction in emotion regulation (ERI; -8.75%, $p<.05$). (See Appendix H, Table 2.)

Students' stage of readiness for change also showed moderation effects. It was linked to significant changes in several focal outcomes. Students in the precontemplation and preparation stages reported a 10.65% ($p<.01$) and 50.67% ($p<.001$) increase in self-compassion, respectively. Students in the precontemplation stage also reported a significant increase in approach coping (14.16%, $p<.01$) and decrease in anxiety symptoms (-19.01%, $p<.01$), as well as decreased

perceived stress (27.07, p<.05), a non-focal outcome. Those in the contemplation phase reported a decrease in expression suppression (-27.71%, p<.01). There was no significant change in depression symptoms by stage of readiness for change. (The paired t-test results for all from Stata are outlined in Appendix I.)

Aim 3

PINS Logic Model and Theory of Change

Logic Model

The logic model in Figure 4.1 in was developed to graphically illustrate the program's inputs, activities, outputs, and outcomes. Inputs included funding, people, effective partnerships, materials and equipment, space, and time. Activities were guided by the overarching objective of helping youth move from the conditioned mind—beliefs programmed over the life course that color thoughts and feelings about oneself and others, and shape behaviors—to reality, and fell into three basic categories: 1) basic mindfulness, 2) processes of the conditioned mind, and 3) processes of awareness. Individual-level activities included mindfulness skill cultivation, such as directing the attention, breathing exercises, compassion and gratitude practices, and mindful movement. Interpersonal/community-level activities consisted of community building, conscious and compassionate communication, loving-kindness meditation, and other group activities. Outputs included counts of the schools participating, classes offered, trainings administered to staff, and students enrolled, and staff tenure. Student-related outputs consisted of counts and/or percentages attending <90% of classes, completing <90% of assignments, passing the course, repeating the course, and attending a Teen Night or mindfulness retreat.

Outcomes, or expected changes included short-term changes in learning, such as increased mindfulness knowledge, self-awareness, motivation, and attitude/perspective. Mid-

Figure 4.1 Peace in Schools Logic Model for Youth Programs

Inputs
Resources invested

- **Funding**: salaries, benefits, trainings, materials, etc.
- **People**: students enrolled in or referred to the class, PINS teachers and staff, PPS co-teachers, teens, school & district support, researchers & advisors, volunteers, colleagues
- **Effective partnerships**: PPS, principals, teachers, funders, researchers, colleagues, etc.
- **Materials/Equipment/Tech**: curriculum, mats, cushions, blankets, yoga mats, bells, journals, pencils, handouts/training materials, markers, white board, etc. projectors, speakers, computers, email, etc.
- **Space**: classrooms, office, space for teen nights, adult offerings, trainings, etc.
- **Time**: curriculum development, ongoing training, class offered, meetings and partnership building, administrative and communications staff time, development/grant writing, etc.

Activities
What PINS does

All activities help youth move from the conditioned mind to reality and fall into three basic categories:
1) Basic mindfulness
2) Processes of the conditioned mind
3) Processes of awareness

INDIVIDUAL
Mindfulness skill cultivation
- Directing attention
- Breathing exercises
- Sitting and walking meditation
- Body scanning
- Compassionate being
- Mindful eating
- Developing self-knowledge
- Meta processes: self-talk, dis-identifying
- Gratitude
- Guided imagery
- Journaling
- Projection
- Identifying survival strategies

Physical movement
- **Mindful movement**: yoga, stretching, walking mediation, etc.

INTERPERSONAL / COMMUNITY
Mindful social skill development
- **Community building**
- **Environment of C.A.R.E.**
- **Conscious, compassionate communication:** reflective & compassionate listening
- **Loving-kindness meditation**
- **Group activities & projects**
- **Participation** in class, Teen Nights, and/or retreats

Outputs
Measurable, tangible direct products

- # of schools participating
- # of classes offered
- Total # students enrolled
- # and % of students attending <90% of classes
- # and % of students completing <90% of assignments
- # and % students passing the course
- # total students repeating the class
- # of students attending at least 1 Teen Night per year
- # of students attending at least 1 mindfulness retreat
- % students satisfied or highly satisfied with the course
- # trainings and training hours administered to staff
- # and % of teachers retained for >1 year, >2 years, etc.

Outcomes
Desired multilevel changes, underpinned by a theory of change

Results or changes expected to be achieved by the program:

Short-term	Mid-term	Long-term
Change in LEARNING	Change in ACTION	Change in CONDITION / WAY OF BEING (financial, health, social, environmental)
↑ mindfulness knowledge **↑ self-awareness/ knowledge** **↑ motivation** **Change in attitude/ perspective**	**↑ mindfulness practice, behavior*** **↑ distress tolerance*** (e.g., coping, resilience) **Improved decision-making*** **↓ risk behavior** **↑ school performance:** ↑ attendance & grades, ↓ disciplinary actions) **↑ relational skills*** (communication, compassion, etc.) **↑ sense of belonging** **↑ social action*** (e.g., create a community of loving-kindness, social support)	INDIVIDUAL **↑ mental and emotional health*** **↓ public health problems linked to risk behaviors** (e.g., substance abuse, suicidality, STIs, etc.) **↑ life opportunities**: (↑ graduation, productivity, etc.) FAMILY, PEERS, COMMUNITY **↓ Conflict / improved conflict resolution** **Improved relationships** SCHOOLS **Improved school environment** (e.g., ↓ violence, bullying) **A more peaceful world**

* Measured in the AMA Health Study

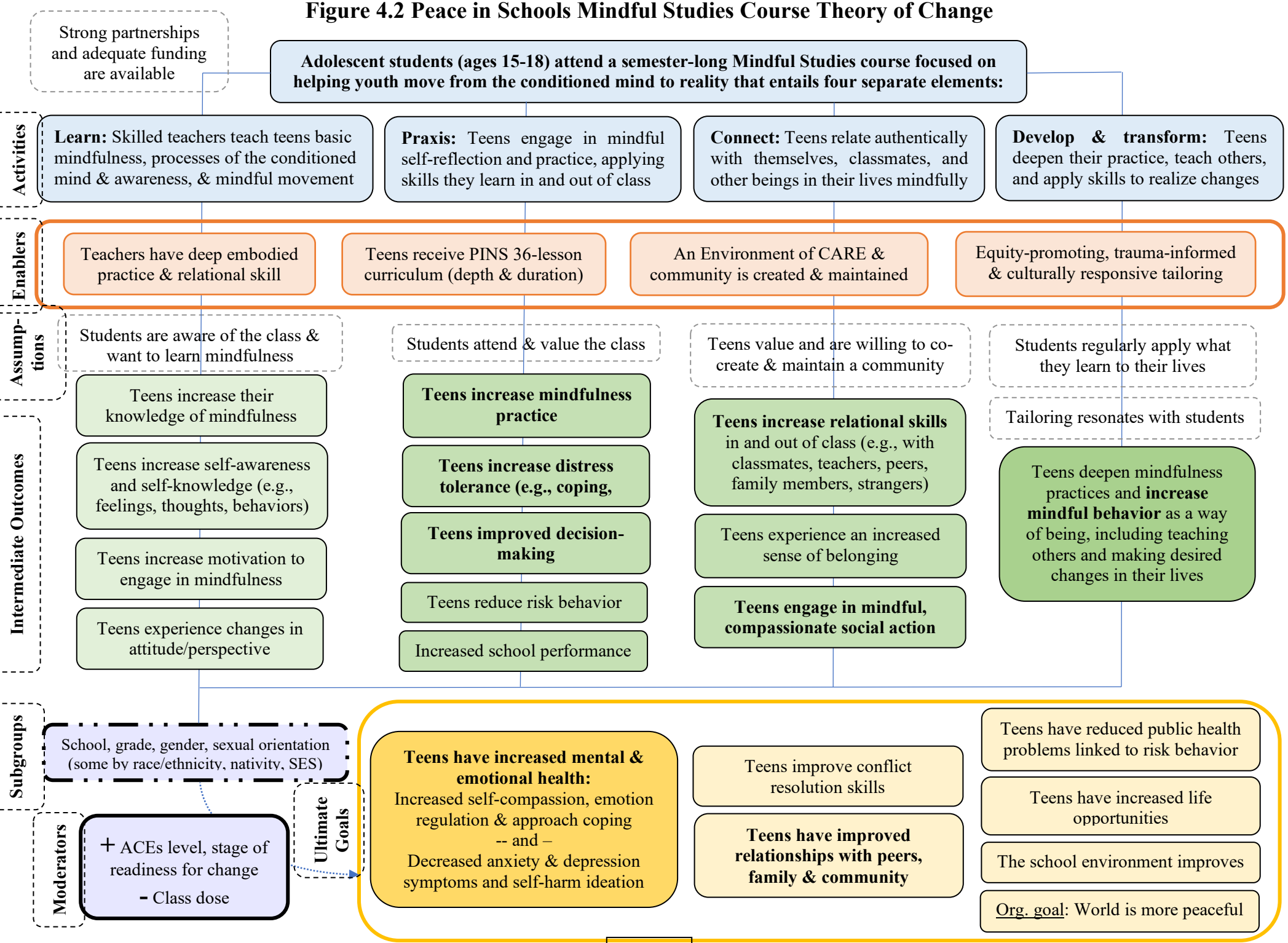
term changes in action measured in the AMA Health Study included increased mindfulness behaviors, improved decision-making, and enhanced relational skills. Long-term changes in conditions/ ways of being assessed in the study included increased mental and emotional health, and improved relationships. The desired multilevel outcome changes of the PINS program also included improved family, peer, and community relationships, improved school environment (e.g., reduced violence and bullying), and a more peaceful world.

Programmatic Theory of Change

A programmatic TOC for PINS was developed, building on the LM and informed by study findings. As Figure 4.2 illustrates, adolescents in the semester-long Mindful Studies course engage in four activity types (in blue): learning, praxis, connection, and developing and transforming. Enabling factors or process elements (in orange) lead to intermediate outcomes (in green) map to short-, mid-, and long-term outcomes in the LM, and ultimate goals or long-term outcomes (in yellow). Subgroup characteristics and moderators have been added (in purple) to indicate factors that may predictably modify outcomes. Underlying assumptions are included in grey, and the elements directly examined in the AMA Health Study are indicated by bolded text.

This TOC illustrates how the PINS Mindful Studies course helps youth move from the conditioned mind (programmed beliefs and behaviors) to greater connection with reality through learning, praxis, connection, and development and transformation. Key enablers and assumptions (that may also be potential barriers if not present) reveal elements that may make or break program effectiveness, as illustrated in the process evaluation. However, when delivered fully and well, a cascade of multilevel intermediate outcomes and ultimate goals may be achieved, with enhanced outcomes for particular groups. Many of the intermediate outcomes and ultimate

Figure 4.2 Peace in Schools Mindful Studies Course Theory of Change



goals were identified by PINS staff during the three facilitated participatory workshops. These were further amplified with findings from the process evaluation.

> Finally, PINS leaders and teachers emphasized that their ultimate goal is to make the world more peaceful, in keeping with the program name: Peace in Schools. While this may appear a lofty goal, the researchers decided to honor the valid epistemic perspective of study participants by including it in the TOC, after it was validated in interviews. As scholars explain: *...Conventional or hegemonic understandings are not neutral reflections on objective reality from disinterested observers… Rather, they are situated understandings from an epistemic perspective of whiteness that have become common sense via projection of racial and colonial power. Regardless of one's social identities, participation in mainstream knowledge forms tends to colonize perception, affording understandings of everyday reality that reflect white epistemic perspectives (and affective sensibilities) and promote interests of white racial power [and the interests of dominant groups, e.g., wealthy, institutional experts, etc.].*[627]

One RESJB best practice in the study involved including the epistemic perspectives of PINS student alumni and parents shared in interviews, which revealed that the class had ripple effects in students' lives, leading to greater internal peace, mental health, well-being, and healthier relationships. They explained how students applied what they learned in romantic and family relationships, at work (especially interacting with youth), as leaders of student organizations, and other areas of their lives. Implications of the study findings above are discussed in Chapter 5.

Chapter 5: Discussion

"We are all formed and deformed by the systems we are in and that are in us. ...Justice is love in action for the alleviation of suffering." ~Rhonda Magee[628]

"Liberation is understanding our humanity and being able to see humanity in others such that we understand our freedom is dependent upon others' freedom." ~Michelle Cassandra Johnson[629]

"It is our duty to fight for our freedom. It is our duty to win. We must love each other and support each other. We have nothing to lose but our chains." ~Assata Shakur[630]

Overview

This chapter discusses the results of the three aims of the research from the AMA Health Study reported in this dissertation. The aims were to: 1) assess the implementation of PINS with a process evaluation; 2) identify whether PINS produces outcome changes in adolescent health and wellbeing, which outcomes had greatest effect sizes, if they differ by level of ACEs exposure or other characteristics (e.g., gender, sexual orientation, race/ethnicity, socioeconomic status [SES], etc.), and whether they were aligned with expected outcome changes in the TOC; and 3) develop a logic model and TOC outlining *whether* and *how* PINS mindfulness classes improve adolescent health and wellbeing. The chapter begins with a brief overview of the study methods, a high-level discussion and deeper dive into the main findings for each aim, followed by a discussion of strengths and limitations, public health implications, and conclusions.

Study Overview

Aim 1 consisted of a process evaluation of the PINS Mindful Studies semester-long course that assessed four components adapted from Linnan and Steckler's (2012) framework: training, reach, fidelity, and contextual influences. The study population included 171 students across three PPS high schools, as well PINS trainers and teachers, and PPS co-teachers; parents/guardians; student alumni; school staff and policymakers; and youth MBI experts. Four qualitative methods: semi-structured FDGs, semi-structured IDIs, observations, and a program

document and field note review (e.g., class activity materials, videos of student and school staff testimony, journal entries, emails from PINS and PPS co-teachers, etc.) —were used to assess program implementation and identify keys to success, and discover reasons why expected results were not observed. Purposive and snowball sampling, and a RESJB lens, were used to recruit diverse participants to FDGs and IDIs. Multiple aspects of fidelity were assessed, including integrity and adherence to the curriculum, quality, and participant experience.

Aim 2 evaluated the mean change, or the association between pre- and post-survey measurements from the beginning to end of the semester-long course, for a series of neurocognitive, psychological, and social health outcomes. The survey sample consisted of 91 students with complete pre/post-survey data. PCA, EFA, and ordinal Chronbach's alpha were used to examine the appropriateness of measures for the study sample. (See Appendix G.) After factor analysis, 12 outcomes remained: two neurocognitive (behavioral regulation and emotion regulation), eight psychological (self-compassion, perceived stress, expression suppression, cognitive reappraisal, approach coping, anxiety symptoms, depression symptoms index, and self-harm ideation), and two social (social competence and social connectedness) measures.

Using two-sided paired t-tests, the remaining measures were examined to determine which outcome measures demonstrated significant mean change and had greatest effect size, assessing three levels of significance ($p<.05$, $p<.01$, $p<.001$). Six outcomes were highlighted for their public health significance and explanatory significance within the literature—or their ability to explain the biopsychosocial mechanisms by which MBIs may lead to changes in the brain, body, and behavior. Subgroup analyses were conducted by performing stratified analysis ($p<.05$) for eight student characteristics, with a focus on marginalized groups: school, grade, gender,

sexual orientation, race/ethnicity, nativity, and SES. Moderation analyses ($p<.05$) were performed for ACEs exposure, class dose, and TTM stage of readiness for change.

Aim 3 involved developing a logic model and programmatic TOC for the PINS program; a critical, transformative theory of change was put forth to inform the field of public health. The programmatic LM and TOC were created through a program document review and three facilitated workshops with PINS leadership and staff. The logic model outlined resources, activities, outputs, and short-, mid-, and long-term outcomes of the PINS program. An initial TOC was developed from the logic model during the facilitated group workshops by asking guiding questions, and using So-That chains and If-Then diagrams to articulate the underlying theory and causal mechanisms believed to be underpinning the PINS program. The TOC was also shaped via "member checks" with stakeholders like parents, school staff, and MBI experts, and informed by findings from process evaluation and outcome evaluation data.

Throughout the dissertation RESJB principles were also applied and discussed, given the deep linkages between mindfulness practices and ways of being, public health, and social justice, and the necessity of applying these practices to uphold proper research ethics when working with vulnerable communities.

Cross-Aim Discussion

To our knowledge, this was the first study to examine a for-credit mindfulness intervention in US public high schools (since we know that PINS is the first), as well as the first to assess the impacts by ACEs level, stage of readiness for change, and several outcome measures not previously found in the mindfulness literature. It also advances the most robust theory of change for the impacts of MBIs on adolescent and adult public health in the field, as far

as we are aware. Study findings suggest that the Peace in Schools Mindful Studies has a high level of fidelity and quality of implementation, a generally positive participant experience, and some (surmountable) contextual factors that impact program delivery. The PINS class also shows strong potential to improve psychological outcomes, and neurocognitive and social outcomes for certain subgroups, particularly marginalized youth with high ACEs, females, and those who identify as LGBTQ+. This pilot study provides strong support for a theory of change in which mindfulness is related to changes in psychological outcomes, as indexed by self-compassion, emotion regulation, coping, and mental health measures. Additional gains were observed in some areas of executive function, behavior regulation, and social outcomes.

Aim 1 Discussion

Aim 1: Assess the implementation of PINS with a process evaluation

The process evaluation examined four program components—reach, training, fidelity, and contextual factors that influenced implementation. Findings revealed that although broad reach was relatively low (primarily because of external factors), teacher training was extensive, and the program was consistently delivered with high fidelity and implementation quality across schools. Contextual factors observed primarily related to funding, space, and equipment challenges, but did not appear to impact the integrity of the program.

The PINS training program consisted of an extensive pre-school-year training, continuous supervision and mentorship, and shadowing of experienced teachers. Specific training components that were perceived effective included experiential learning, role play, and critical discussions about race, social justice, equity, and inclusion. The extensive training

manuals and curriculum also evidenced high quality training materials. Given the effectiveness of the PINS class, its training model may serve as an exemplar for other MBIs.

While the overall reach of the PINS program was small across the three selected schools, with less than 5% of eligible 10^{th}-12^{th} grade students enrolled, in the classes that did offer PINS, class sections were filled to capacity, and in some schools demand for class exceeded available spaces. This indicates the need for further funding or prioritization for PINS by PPS administration to increase further reach in the schools. In addition, overrepresentation of marginalized student populations indicated that high-needs and trauma-affected students were disproportionately opting in—and, as quantitative results showed, also benefitting from—the Mindful Studies course. There are significant public health implications for a program that is acceptable to diverse vulnerable youth populations *and* relatively accessible and affordable. The reach of the program suggests that it might be scaled to other large urban areas and public-school systems in the US with similar demographics, with some local tailoring. Moreover, the reach of the PINS course suggests that it may be one effective intervention to begin addressing the mental health crisis affecting most US teens.[631]

Fidelity was evidence by strong integrity and adherence to the curriculum, quality of implementation, and preponderantly positive participant experience. Four elements of program quality—foundational to its effectiveness—included qualities of the teachers, classroom environment, curriculum, and program tailoring. One of the most important factors that characterized the high quality of PINS was the PINS teachers who embodied mindfulness and relational skills. This included their ability to cultivate authentic relationships, embodiment of mindfulness practices and ways of being, caring and compassion, calming presence, vulnerability, equitable ways of relating, flexibility, and trust building. The teacher relationship

served as a foundational facet of the learning environment that facilitated students' ability to connect meaningfully with themselves, the teachers, other students, and the class material. As one researcher and expert yogic/mindfulness teacher explains, "In order to see ourselves, we must rely on reflection. …The eyes with which we are seen become the eyes through which we see ourselves."[632]

Observations of classrooms, as well as interviews with PINS teachers, demonstrated that having an *Environment of CARE and community*, where students and teachers hold themselves and others mutually accountable to uphold confidentiality, acceptance, reverence, and empathy also contributed to high quality program implementation. This provided a container or "brave space" where students shared vulnerably and connected authentically in ways that are often not typical in school settings. This program element may have particular relevance for school policy and practice for teachers and school administrators who wish to foster inclusion, reduce bullying and school violence, or address social isolation linked to many mental health problems. Additionally, the Environment of CARE also holds promise for addressing individual and collective trauma, as evidenced in the school shooter incident. As a leading expert on conflict, violence, behavioral health, and the intersection of racialized trauma and mindfulness explains, "…Trauma and healing aren't just private experiences. Sometimes trauma is a collective experience, in which case our approaches for mending must be collective and communal."[633] It is also important to note that classes appeared to reach a 'tipping point' when a greater sense of community and closer bonds emerged around the six to eight-week mark, as mentioned in several interviews with PINS and PPS co-teachers, which may inform the development of other youth MBIs. These factors can apprise MBI development.

Curriculum depth and course duration, which consisted of over 60 hours of classroom time, was also found to be an essential facet of program quality driving deep learning, self-exploration, practice, community-building, and opportunities to build SEL and mindful relational skills. Many students asked for more class time, citing the desire to deepen content exploration, trust, and community; maintain a routine of having mindfulness year-round; and having opportunities to revisit content they missed or that did not sink in the first time around.

Equity-promoting, trauma-informed, and culturally responsive tailoring was also a key factor of implementation quality. Practices that featured "power with" (vs. "power over/under") and equitable treatment, tailoring to trauma-affected nervous systems, and cultural diversity evidence strong fidelity. These factors help to explain preponderantly positive participant experiences and ubiquitous benefits reported by students and other stakeholders. However, while minimal, the quantitative findings of no subgroup differences by race/ethnicity and non-US-born status—one of the few hypotheses not supported by the data—as well as one finding that self-compassion decreased among black students (n=4) suggest that some additional racially/ethnically and culturally-specific tailoring and teaching may be needed, and could strengthen the PINS program.

Taken together, the elements of fidelity in the PINS class are a double-edged sword. It may both make it harder to replicate—for example, it may be challenging to find such skillful teachers or to reproduce a curriculum of this caliber—but this high-quality model also provides an explanation for program effectiveness and a blueprint for other youth (or adult) MBIs. However, the comprehensive PINS training, including the teacher curricula and PINS training model, may help by providing a blueprint for replicability of high-quality youth MBIs.

There were a diverse range of reasons given by students in FDGs for enrolling the Mindful Studies course, perceived benefits of the class, weaknesses and suggested improvements, and real-world applications of mindfulness. These participant experience findings showed that many students opt in to improve mental health and well-being, relationship with oneself and others, school and sports performance, and to gain tools for use in daily life. However, awareness, communication, and education about the class among students, parents, and school staff and policymakers is needed, as there was confusion or lack of clarity about the class among many stakeholder groups. Once exposed to the class, most youth agreed it could benefit people from children to adults but should remain elective. Weaknesses of the class point to opportunities for improvement by shifting class design to offer more choice and additional trauma-informed best practices, improving class spaces and equipment, and enhancing the variety and frequency of activities. Making the class fulfill a health or PE requirement, and garnering additional funding and support from PPS leaders and administrators are also obstacles and opportunity areas linked to program sustainability. Lastly, real-world applications of mindfulness reported by students and observed during a shooter incident at one school illustrated the potential for much broader applications of the PINS program to address school crises, trauma, and mental health needs. Additional consideration should be given to strategically expanding the program and offerings schoolwide or District-wide to equip students, teachers, school staff and administrators, and possibly families and communities with mindfulness skills to face challenges and trauma.

Contextual factors found to be impacting the class included limited support, funding, and valuation of the PINS class by some PPS school staff and administrators. Several students voiced that the class was relegated to substandard spaces and given minimal attention by school leaders,

which stands in contrast to preponderantly positive participant experience and ubiquitous acknowledgement of class benefits by students and others. This disconnect may signal broader contextual influences regarding limited funding streams that affect the school system more broadly, low awareness of the class and its health benefits, as well as the need for PINS to strengthen communications and outreach activities to cultivate stronger sustained support. Additional analysis might explore what elements might lead to sustained partnerships and models for funding sustainability.

Aim 2 Discussion

Aim 2: Identify whether PINS produces outcome changes in adolescent health and wellbeing, which outcomes had greatest effect sizes, if they differ by level of ACEs exposure or other characteristics (e.g., gender, sexual orientation, race/ethnicity, socioeconomic status [SES], etc.), and whether they were aligned with expected outcome changes in the TOC

Statistical analysis of the effects of the Peace in Schools Mindful Studies program suggests that it effectively improved five focal outcome areas: self-compassion, emotion regulation (expression suppression), approach coping, anxiety symptoms, and depression symptoms, including self-harm ideation. Health benefits were seen across the board, including among non-marginalized white, heterosexual, non-low-income, and US-born students. Additional benefits were found among high-ACEs, female, gender non-binary, and LGBTQ+ students in many outcome areas. Positive outcome changes were also observed for subgroups in non-focal outcomes, including reduced perceived stress for female students and improved cognitive reappraisal (a measure of emotion regulation) for gender non-binary students.

There were also a few significant changes found in small subgroups (n=4-11) in directions counter to hypotheses, which merit further study. Black students (n=4) reported reduced self-compassion. Students repeating the class also reported reduced behavior regulation on the BRI subscale and reduced emotion regulation on the ERI for female and LGBTQ+ students; the latter finding stands in juxtaposition to improvements found in expression suppression on the ERQ, a focal measure of emotion regulation. The BRI and ERI findings are somewhat in question, given that they are part of the BREIF2, which showed statistical problems that indicated this scale might not be appropriate for use with the study population.

There were few significant differences observed for racial/ethnic minority, low-SES, or non-US-born students, counter to our hypothesis. Given that ACEs disproportionately affect low-income and minority youth and the program had added benefits for high ACEs students, this finding may indicate that ACEs play a greater role than race/ethnicity, nativity, or SES in the benefits of mindfulness. In other words, it is possible that these findings may suggest that "ACE not race" is a much more important factor in determining the trajectory from trauma to better-or-worse health, and indicate that ACEs screening—as well as screening for TTM stage of readiness for change—could be used to determine who might most benefit from youth MBIs. Alternatively, it is also possible that ACEs served as a proxy for race or SES. However, the sample size, particularly subsamples of students with certain levels of ACEs, were too small to explore interaction while maintaining requisite parameters to make strong statistical claims. A third possibility is that additional tailoring to marginalized groups is needed to see benefits beyond peers for racial minority and immigrant students seen among other marginalized groups like females, non-binary, LGBTQ+, and (in some cases) low-SES youth. Future research should be done to examine the effects of MBIs by ACEs exposure, controlling for and more closely

examining race/ethnicity, nativity, and SES—including exploration of interaction effects. Additionally, since cultural responsiveness is a core tenet of the Mindful Studies curriculum, future work might be done by PINS to examine and enhance culturally specific and other tailored teachings.

Taken together, outcome evaluation findings indicate that school based MBIs can help address the ACEs, mental health, and trauma syndemics. Moreover, the results of this study are likely to be attenuated—or not demonstrate the program's full effects—for several reasons. First, the pre-survey was not administered until the fourth week of the 25-week semester, while an adequate number of students was recruited. Thus, changes that occurred in the first four weeks were not captured. Second, the post-survey was administered during the last week of school when final exams are given, a time when stress levels are known to be high and mental health often declines. For this reason, gains in psychological outcomes, especially for several high-risk subgroups, were noteworthy; and it is hypothesized that these outcomes may have been even more noteworthy versus a comparison group who did not receive the intervention. While the PINS students reported increased emotion regulation, self-compassion, and coping skills, and reduced anxiety and depression symptoms by the end of the semester, non-PINS students are hypothesized to experience reductions in these areas at the end of the semester. Future work could build on this pilot study, incorporating a comparison group and a larger sample size.

We did not observe any significant group differences across the entire study sample in the neurocognitive and social outcome areas, as anticipated, but some benefits were seen in subgroups. Furthermore, responses were not in the predicted direction for two subgroups on the BRIEF2 executive function subscales, and for one small racial subgroup on the self-compassion subscale, which merit future exploration. However, some of these findings may be understood by

applying an adolescent development lens. For example, LGBTQ+ and female students showed slight decrease in emotion regulation on the BRIEF2 subscale and increases in emotion regulation on the ERQ. Given that female, gender non-binary, and LGBTQ+ teens, and teens with stressful family lives (e.g., with ACEs and trauma),[634] are generally more prone to internalizing behaviors than their male, cisgender, and heterosexual peers,[635,636] it is possible that as mindfulness activities invite self-inquiry—including examining emotions and possibly choosing to revisit trauma—the ability to regulate emotions may shift and possibly worsen according to certain metrics before ultimately improving. For example, field notes included the following email from a PINS teacher written sent to the lead researcher:

> *Yesterday a student wanted to talk after class. She wanted to share a breakthrough she's had. She has been feeling 'empty' lately, but not in a bad way. She was talking to her therapist about this new feeling and made a link to mindfulness – this feeling that she's getting in touch with her wholeness – feeling at ease, grounded, peaceful. She shared that it's so foreign to her that at first she was scared it was bad, but her experience is actually that it's just different. She's learning how to come back to this place more and more. She just wanted to share how the class has impacted her in this way. ~PINS teacher*

It is also possible that BREIF2 may not be an appropriate measure for this population, as one of its three subscales was not deemed appropriate for EFA. Future research should explore emotion regulation among these populations with a variety of scales, including assessments over time, with an eye toward potentially more complex patterns of change. Future studies might also consider alternate social measures to capture hypothesized social changes, like belonging and trust, currently assessed by PPS in annual surveys. This could provide a couple common

measures to compare student experiences (and outcome changes) within the class and within the school. Development of additional scales and measures tailored to youth, diverse and marginalized populations, and youth MBIs is also a lacuna in the field currently.

Aim 3 Discussion

Aim 3: Develop a logic model and theory of change (TOC) outlining whether and, if so, how PINS mindfulness classes improve adolescent health/well-being

The LM and TOC developed with and for the PINS program as part of a process evaluation contribute a high level of nuance and rigor to this study and comparable studies of MBIs where these are notably absent. The inclusion of a process evaluation allowed for assessment of the mechanisms behind hypothesized and demonstrated outcome changes, helping to explain why and how changes may be occurring and helping to identify best practices, barriers and challenges. Process evaluations and the inclusion of LMs and TOCs is rarely seen in the MBI literature, and to our knowledge the PINS TOC presented in this research is the most detailed in the MBI literature to date. A few components that make the PINS TOC different from those of other MBIs include: a strong underlying conceptual framework linking program activities to neuroscientific, biopsychosocial, and behavioral pathways associated with public health outcomes of interest; the integration of an understanding of ACEs and trauma; attention to adolescent development leading to differential impacts of MBIs on adolescents and adults; a clear articulation of specific activities transmitted and received by varied stakeholders (e.g., teens, teachers, families, etc.); incorporation of assumptions (potential barriers) and enablers; an outline of causal mechanisms likely leading to outcome changes; and inclusion of evidence-based moderators and subgroup characteristics that may change the magnitude and direction of outcomes. Additionally, using PAR processes and RESJB best-practices led to more robust final

LM and TOC produces reflective of the epistemic perspectives of the stakeholders—enhancing both the validity of the TOC and offering improved research ethics strategies for future research.

One key to PINS' program effectiveness appears to be its strong intentional underlying program design by which its trainers and teachers use specific inputs and activities to create measurable outputs and outcomes in learning, behaviors, and conditions over time. Several elements of the LM and TOC were briefly touched upon but largely beyond the scope of the study, and should be examined in future studies (e.g., multilevel factors examined via expanded ACEs). A clear and layered compendium of activities, enablers, and conditions (captured by assumptions in the TOC) delivered with fidelity and quality implementation have been shown to achieve intended outcomes, including increasing mental and emotional health, relational skills and relationships quality, and positive multilevel ripple effects.

The PINS TOC, which reflects the underlying processes and mechanisms leading to outcome changes, is much more robust that other leading explanations of mechanisms by which MBIs lead to changes in health and wellbeing. For example, a leading framework outlines the importance of intention, attention, and attitude as key drivers linked to positive outcome changes but fails to provide more detailed mechanisms or test the TOC with a specific program. One of the assumptions in the PINS TOC (students are aware of the class and want to learn mindfulness) is an umbrella factor that assumes that intention, attention, and attitude are conducive to the intermediate outcomes and ultimate goals of the program.[637] In a study of a youth MBI in Baltimore, a simple map of hypothesized change mechanisms was outlined, which illustrates an advancement toward greater delineation of TOCs that are rare in the literature on youth and adult MBIs.[638] Most studies still fail to include the development and testing of comprehensive programmatic TOCs. In contrast, the PINS TOC in this study provides a considerably more

detailed explanation of underlying mechanisms by which inputs and activities lead to specific changes knowledge and attitudes, then behaviors, followed by intermediate outcome changes and ultimate goals, including changes in adolescent health and wellbeing.

Fig. 5.1 Mechanisms of Mindfulness[639] **| Fig. 5.2 Sample TOC/Hypothesized MBI Effects**[640]

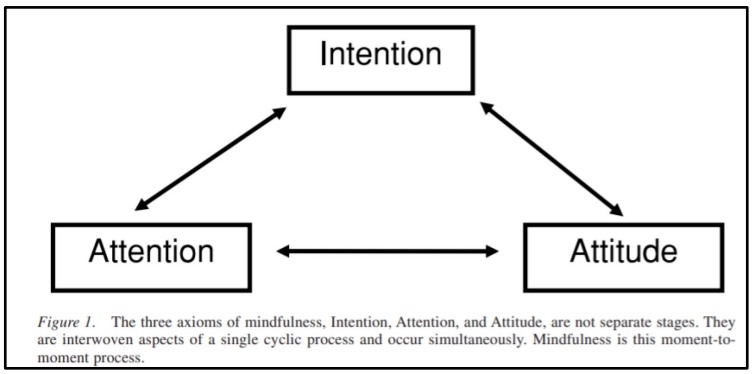
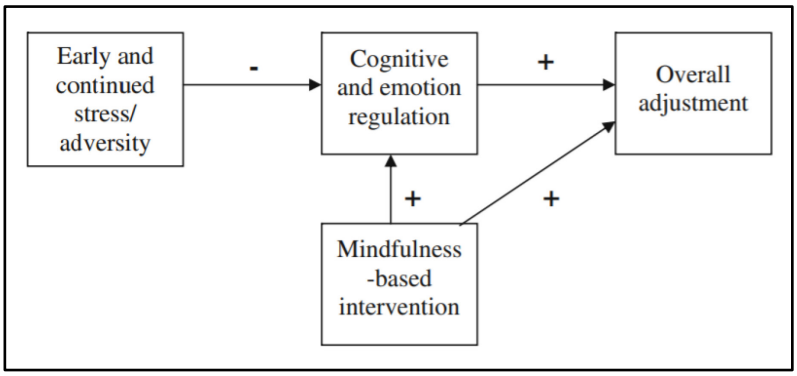


Figure 1. The three axioms of mindfulness, Intention, Attention, and Attitude, are not separate stages. They are interwoven aspects of a single cyclic process and occur simultaneously. Mindfulness is this moment-to-moment process.



The incorporation of a process evaluation and the development of a LM and a TOC is recommended for future studies of MBIs and other youth programs to enhance the rigor and understanding of not only *what* outcome changes programs may effect, but also *why* and *how* these changes occur. Programmatic TOCs might be used to inform and develop broader TOCs for the fields of neuroscience, behavioral science, and contemplative practice, integrating programmatic elements, scientific understanding, and implications for intervention development and dissemination at many scales. For example, future work might triangulate the LM, TOC, and quantitative findings with understandings of the human brain and HSRS (outlined in Chapter 2). An initial review suggests that PINS helped students hone skills that developed bottom-up regulation skills, preventing false alarms in the amygdala by cultivating mindfulness skills to assess threat and restore balance more appropriately. This may be evidenced by reducing anxiety symptoms and increasing self-compassion (which includes mindfulness skills, disidentifying, and common humanity). PINS also appeared to strengthen top-down skills, such as increased

executive functions and coping skills. Future research that includes biometric data collection could build upon the findings and biopsychosocial theories of change seeded in this pilot study.

Study Strengths

Strengths of this study include addressing important gaps in the field, such being the first to explicitly examine the impacts of an MBI by level of ACEs in schools, expanded ACEs, stage of readiness for change, and student characteristic subgroups with a focus on marginalized groups. Incorporating both a process evaluation and outcome evaluation also set this study apart by examining both what is changing, as well as how and why changes may be occurring. In addition, the racial/ethnic, socioeconomic, gender, and sexual orientation diversity in the sample, and the urban public-school setting, enhanced the generalizability of findings. While moderate, the sample size was large enough to conduct some rigorous tests of moderation and had the power to detect medium to large effect sizes. The use of PCA, EFA, and ordinal Chronbach's alpha examination of measures to determine their appropriateness for the study population/data set was another strength of this study; it led to the elimination of several inappropriate measures.

The study also employed many best practices, including mixed methods data, using participatory/PAR approaches, a trauma-informed protocol for sensitive questions, using ACASI to enhance the validity of survey responses, and multilingual offerings. A robust risk mitigation strategy and strong RESJB principles were applied throughout the study, strengthening the underlying research ethics, enhancing safety of vulnerable participants, and offering a blueprint to be added to and further enhanced as best practice in the field of public health. This includes applying critical epistemology, axiology, and pedagogy to properly cite and acknowledge sources of foundational knowledge in public health (e.g., the indigenous social-ecological model) often misattributed to Western scholars (e.g., Dr. Brofenbrenner), thereby denying the

contributions of POC. Critical theory and practice in this study also led to the development of transformative and RESJB-centered research and evaluation approaches, practices, and models for use in subsequent evaluation work with city and county governments. This study is also unique in its curation of measures tailored to adolescents and diverse populations, which also have rigorous psychometric properties. Lastly, the study also advances a robust theory of change, significantly contributing to the field and providing a foundation for others to improve upon.

Study Limitations

Despite the study's strengths, there were also several limitations. A larger sample size would have permitted more rigorous tests of moderation, and the ability to detect group differences of smaller sizes. This study could also have been strengthened by including teacher and/or parent-reported data in addition to self-report data, follow-on data collection (e.g., at 6-, 12-, 18-, or 24-months), expanded multilingual offerings, biometric data collection, and cost-effectiveness analysis—and financial and human resources to support these study activities. Limitations also included not having a comparison group, although this was appropriate given the aims and exploratory nature of this pilot study.

Another limitation reflecting a gap in the field was in identifying appropriate measures for MBIs, especially for adolescents, school settings, and diverse populations. PCA and EFA also revealed that several published measures used in this study were not appropriate for the study sample. Thus, analysis could not be completed for the following scales: compassion for others, cognitive regulation as a measure of executive function, and avoidant coping. Studies with larger samples should be conducted to verify whether these measures are appropriate for studies of school based MBIs. As most measures in the study were designed for non-mindfulness-based programs and clinical applications, future scale development is needed to

ensure that outcomes MBIs aim to change are captured appropriately. As explained in the BREIF2 manual: "Given the central importance of the executive functions [and other outcomes] to controlling real-world behavior, reliance solely on clinic-based test performance measures can potentially yield…incomplete assessment…limited in ecological validity and generalizability to the everyday environment."[641]

Public Health Implications: Practice, Policy, and Research

This study furthers our knowledge of the impacts of the PINS Mindful Studies course, and the potential of youth MBIs to improve neurocognitive, psychological, and social health. Our research suggests that the PINS programs improves a range of important health and wellbeing outcomes in adolescents (ages 15-18), including increased self-compassion, coping, and emotion regulation, and reduced anxiety, depression, and self-harm. The program also had additional benefits for marginalized groups, especially students with high-trauma backgrounds. The need to draw attention to the potential of MBIs to address the syndemics of ACEs, trauma, and mental health among adolescents is highlighted by our findings. Public health implications of this pilot study include using MBIs to promote and prevent (primary, secondary, and tertiary) adolescent health and wellbeing in the face of ACEs, trauma, and the mental health crisis in US public schools. The implications of these findings extend to practice, policy, and research; and should be advanced in these three areas simultaneously, being braided together, rather than linearly.

Practice

Study results suggest that programs like PINS may be patterning healthier wiring in the brain, bodies, and behaviors of adolescents. This recommends quality MBIs, and PINS in particular, as having the potential to shift life trajectories toward more positive health and life

outcomes by providing youth with the inner wiring and the outer practices to better face and surmount challenges—especially for certain marginalized and disadvantaged groups. Thus, a greater focus on the "inner curriculum" in public schools, to include high-quality mindfulness programs like PINS, may have far-reaching benefits for adolescent health, wellbeing, and behavior. As Larry Yang, a leading mindfulness teacher and founder of the East Bay Meditation Center (EBMC) and Spirit Rock Meditation Center (SRMC) writes, "Mindfulness allows us the space to create skillful, meaningful, and transformative action."[642]

Quality MBIs appear to be a joint public health-and-public education solution: a way to skillfully and meaningfully transform upstream health, educational, and social patterns (often established in the 'critical period' of adolescence) linked to consequences across the life course. These patterns include poor attention; lower school attendance and dropout; social isolation; bullying; risky behaviors like substance use and risky sex, which are linked to teen parenthood, mental health challenges, incarceration, and more. This patterning also includes poor cognitive, emotion, and behavior regulation leading to problems such as addiction, relational issues, depression or other mood disorders, and suicidality. PINS is a high-quality youth MBI that shows promise in shifting or rewiring more fundamentally healthy patterns in the hearts, minds, and actions of adolescents. Given the health benefits found among youth with no ACEs to 14 ACEs, PINS (or other MBIs implemented with quality and fidelity) may serve as an effective primary, secondary, and/or tertiary public health prevention strategy.

Mindfulness programing and training may also beneficially shape the behaviors and practices of teachers and other school staff. For example, many students characterized most other teachers and staff as authoritarian, unapproachable, and adults with whom authentic connections and relationships are scarce, in contrast to the approachability and caring of the PINS teachers.

Mindfulness training for teachers may help to shift status quo school staff behaviors and reduce implicit bias. This, in turn, may positively impact the school environment and adolescent health and wellbeing. Furthermore, the application of mindfulness skills by teachers and students in schools in real-time, real-world crises, such as school shooter incidents (described in this study), also suggests that public school teachers and staff might benefit from PINS training to manage crises. Extending this training to families and communities, as PINS has begun to do, would also be applying best practice from the field of adolescent health and the indigenous social-ecological model: 1) having one caring adult can change the health trajectory of a youth's life; 2) multilevel interventions are more likely to lead to sustained behavior change in adolescents; and 3) multilevel MBI interventions have the potential to diminish and interrupt teacher burnout, counselor burden, and (by addressing ACEs, trauma, and sequalae) the transmission of intergenerational trauma and dis-ease.

Study findings suggest that scaling the PINS program requires tailoring to local community needs unique to the school-based setting where the program is implemented. Ongoing assessments that include both process evaluation and outcome evaluation may also key to achieving the myriad desired impacts of MBIs. These include maintaining fidelity, quality, and preponderantly positive participant experiences, ensuring the program is having intended effects, and continuing to verify or modify the TOC to reflect the true mechanisms of change underlying, and changes produced by, the MBI. Other youth MBIs can also borrow best practices from PINS to maximize program quality, including: 1) teachers embodying mindfulness and relational skills, and seeking and honing these qualities in hiring and teacher training; 2) cultivating and Environment of CARE and sense of community inside and outside of the classroom; 3) curriculum depth and duration of at least 6-8 weeks, but likely much longer given

the 6- to 8-week group cohesion 'tipping point' found; and 4) offering equity-promoting, trauma-informed, and culturally-responsive tailoring.

Additionally, school administrators and policymakers should consider including quality MBI training, like PINS, schoolwide and exploring whether an Environment of CARE might ultimately be extended or applied schoolwide. Some schools, including Marysville[643] and Sunnyside Environmental School[644] in Portland, Oregon, have begun to implement school-wide mindfulness programs. The mindfulness curricula used as the basis of these programs, Mind Up[645], has shown positive results. This suggests that a program like PINS, with the promising findings provided in this study, would yield even broader public health, education, and social benefits if applied schoolwide.

Through the implementation of the AMA Health Study, it became clear that PINS can be an integral resource for counselors and other school staff to refer students struggling with trauma, mental health issues, or high stress; and reciprocal referrals can be made to counselors as PINS staff identify student needs. PINS teachers and rooms also can serve as "brave spaces" within schools where students can feel safer and reach out for needed social or mental health services (as was done as a part of the Risk Mitigation Plan in this study). Thus, PINS can and does serve as a mental health resource and key waystation along school pipelines of wellbeing.

Policy

"This is the 'back of the bus' moment of our time… This is the time when we will actually embody our practice and teachings, or not." ~Rev. angel Kyodo williams, Sensei

Given the growing body of research on the health benefits of MBIs spanning more than four decades that this study forms a part of, public health officials, schools administrators, and

policymakers should consider ensuring that high quality mindfulness is offered in public schools. The PINS program demonstrates some of the most promising outcomes seen among youth MBI in the mindfulness and public health literature to date; however, an impact evaluation (with a control group) is needed to verify that the changes observed can be attributed to the program. This study showed significant outcome changes in more major adolescent public health problem areas than any other youth MBI we could find in the field. This study suggests that youth MBIs can serve as an effective primary, secondary, and tertiary public health intervention to improve adolescent neurocognitive, psychological, and social health outcomes in diverse public-school settings, with disproportionate benefits for several marginalized groups.

The AMA Health Study, along with other scientific evidence, might motivate policymakers to pass laws that structurally require, prioritize, and provide funding for "inner curriculum" and MBI programs for adolescents ages 15 to 18—and explore comparably effective MBIs for younger children and adults. Public school SEL portfolios could also ensure quality MBIs are broadly offered in schools and provide resources to ensure teachers and school staff also have MBI training. This would expand their tools and enhance their relational skills, conflict management, and ability to address student trauma, mental health, challenging behaviors, and crises. Policy changes could also include MBI training for families and communities to ensure scaffolded support for youth and begin to dismantle intergenerational cycles of trauma and sequalae. Requisite public funds would be needed to ensure program quality and sustainability.

Research and Scholarship

As mentioned above, further research is needed in the area of youth MBIs, underpinned by a fundamental understanding that decades of research, including this study, show that MBIs are a viable, quality, effective, and fairly affordable public health prevention and intervention

strategy. Future research building on the AMA Health Study should include an impact evaluation with a control group, which would allow researchers to determine how much of the changes observed can be attributed to the PINS program; without this, it is not clear whether PINS was responsible for the outcome changes observed. Future studies could also be strengthened beyond the pilot study by recruiting a larger sample size to detect smaller effect sizes; including one or more comparison groups, or considering a randomized control design (e.g., PINS compared to other youth MBIs and a non-intervention group); including teacher- and parent-reported data; collecting follow-on data to assess whether impacts are sustained over time; expanding multilingual offerings; collecting biometric data; and conducting cost-effectiveness analysis.

Further work is also needed in the development of additional scales and measures to assess intended outcome changes of youth MBIs; that are appropriate to diverse study samples, adolescents, and school-settings; and are not intended for clinical applications. This is essential to enhancing ecological validity and generalizability. We recommend including PCA and EFA in statistical analysis to determine the appropriateness of measures. We also recommend examining and comparing ACEs indexes and weighted ACEs measures that capture recentness, frequency, and severity, to determine which are best for youth MBI studies. Future studies should always include expanded ACEs, in addition to the traditional 10 ACEs, and explore which expanded ACEs most representatively capture detriments at the school/peer, community, and macro levels. Future research should also examine similarities and differences of the PINS program if offered in other non-public school settings (e.g., private, charter, etc.) and in countries beyond the US.

The researchers recommend that best practices from the AMA Health Study be implemented as standards in the field going forward, including applying trauma-informed approaches to research design and implementation in public schools, when studying youth MBIs,

and when working with vulnerable populations. This study suggests that public health research institutions should requiring trauma-informed approaches by as part of both their research ethics curricula and IRB risk mitigation plan requirements going forward. Additionally, the use of mixed methods and collection of field notes, participatory methods/PAR, inclusion of diverse and broad stakeholder groups, providing multilingual materials, and allowing ample time for research collection are other best practices that should inform future studies with youth, on MBIs, and about ACEs among youth. Applying an RESJB framework also holds great promise as a best practice to inform the fields—and interdisciplinary nexus—of public health, public education, neuroscience (and biopsychosocial science), mindfulness / contemplative practice research, and the Science of Social Justice.[646]

The findings of this study also suggest that silo-ing by discipline has been detrimental, leading to major blind spots and a dearth of interdisciplinary studies at the nexus of the fields of public health, public education, neuroscience (and biopsychosocial science), mindfulness and contemplative practice, and the Science of Social Justice and RESJB best practice. This study deviated from most other literature and texts used to inform the study design, data collection, and analysis because it applied critical and transformative pedagogy, epistemology, axiology, methodology, and practices, as well as an RESJB lens. This implications of this study recommend the formation of interdisciplinary departments and consortia at critical nexuses where there appear to be complex, interdisciplinary problems (like the tripart ACEs, trauma, and mental health syndemics); and, thus, where additional resources may be needed and solutions generated may have amplified effects, or address multiple issues upstream and across disciplines. Work in this area, with Dr. Dan Siegel at the vanguard, is known as Interpersonal Neurobiology.

Schools of public health and other research institutions would also benefit by incorporating and requiring RESJB best practices and applying an RESJB lens to institutional and structural racism and oppression embedded within and perpetuated by the institutions. As part of true research ethics and the highest standards of ethics purported to be upheld in academia, all academic institutions, including Johns Hopkins University, should be actively working to systemically redress harms to the community and implement best practices in critical, liberatory, and transformative pedagogy, epistemology, methodology, axiology, and practice in the field of public health and beyond. Given the long legacy of the colonization of thought and practice in the field of public health—with Johns Hopkins University as a leader in this field—tools from the *Pedagogy of the Oppressed* by Paolo Freire, concepts outlined by Dr. Quiñones Rosado in *Consciousness-in-Action*, and several other works cited herein can provide an initial blueprint for institutional RESJB change.

Conclusion

This study sought to examine the benefits of a program, Peace in Schools, whose aim is to offer transformative mindfulness education. The semester-long Mindful Studies course is offered to highly diverse Portland Public high school students, and underserved groups, particularly high ACEs/trauma, low-income, LGBTQ+, and non-US-born students—many of the groups most oppressed and facing the greatest public health challenges in the US. The ACEs, Mindfulness, and Adolescent (AMA) Health Study, conducted to examine program implementation and changes in outcomes, found that the program had robust training, high fidelity and quality of implementation, preponderantly positive participant experiences. This study was novel in examining the first and most extensive mindfulness course in public schools, the first to examine impacts by ACEs level and expanded ACEs and used critical epistemology

and axiology and RESJB best practices. Some findings were counter to hypotheses, including no added benefits for minority groups by race or nativity; however, high-ACEs students reported greater benefits, suggesting 'ACE, not race' may be a more important predictor of health benefits of MBIs. More research is needed to build on this pilot study.

Participation in the Mindful Studies course was linked to measurable improvement in several neurocognitive, psychological, and social outcomes. This included increased self-compassion, emotion regulation, and coping skills and reduced anxiety symptoms, depression symptoms, and self-harm ideation. While there were some mixed findings, this evidence amounts to measurable change in more important areas to the triune syndemics of ACEs, trauma, and mental health among adolescents. The implications of these findings extend to practice, policy, and research; and should be done in these three areas simultaneously.

Mindfulness should be a principal focus of public health promotion and prevention research and public education policy, given growing evidence of its ability to address the ACEs, mental health and trauma syndemics—and downstream detriments on health and learning. Study findings showing improved neurocognition, mental health, and social outcomes demonstrate that MBIs may be particularly effective in laying a healthy foundation for health and wellbeing during the critical window of adolescent development. Given the accessibility, affordability, and upstream impacts of MBIs in public schools, the PINS program may not only significantly impact students over the life course, but also may contribute to reduced teacher burnout, counselor burden, and interrupt intergenerational trauma. Future research should include best practices (discussed above), address study limitations by conducting further research that includes collecting comparison group, third party, biometric, and follow-on data, and cost-effectiveness analysis, and exploring and developing more measures for MBIs and ACEs.

Final Remarks

As I conclude this dissertation research, cities across the United States and globe are on fire and in deep processes of change as people in the US and beyond rise up against racial inequity and social injustices following the COVID-19 crisis and the murder of George Floyd, in Minneapolis, Minnesota—my hometown. The conceptualization, execution, and findings of this research help to provide blueprints for ways in which deep othering, cycles of trauma, and mental health problems might be transformed into pathways to belonging, promoting healing and thriving, and mental and behavioral balance and resilience. The study findings also show that quality MBIs like PINS may provide keys to dismantling racism, discrimination, othering, and oppression embedded at individual, interpersonal, institutional, and structural levels.

There is also a need to repair damaged relationships with communities that research entities have institutionally misused and traumatized, and redress cultural appropriation—especially the intellectual plagiarism of concepts and frameworks from BIPOC peoples and traditions by patriarchal, white supremacist, and institutional authoritarianism that academic institutions have represented and continue to represent due to persistent patterns of behavior. I begin by reclaiming the indigenous social-ecological framework and advise researchers and practitioners to begin naming the persistent erroneous attribution of this framework to Dr. Brofenbrenner and other white, western scholars, and give proper attribution henceforth. Interdisciplinary study at the nexus of neuroscience, mindfulness, and systems transformation also merits greater attention in the field of public health research and practice, given the promise it shows in advancing health and wellbeing in adolescence and across the lifespan—shifting away from its marginalized position as "complementary" health/medicine.

In closing, public health and education policy, practice, and research at the tribal, local, state, national, federal, and international levels should give greater priority to "inner curriculum" and effective, quality MBI programs like the Peace in Schools program in public schools across the US and world, given their potential for broad health and life benefits. These whole-child, whole-community approaches to health and education hold promise for helping us to remove the 'chains' that bind the minds, bodies, behaviors, and futures of youth, families, and communities. This study adds evidence to Dr. King's (and other leading scholars') conclusion that public health is social justice.[647,648,649] The pilot AMA Health Study reveals the powerful potential of mindfulness to transform individual and collective trauma and health—and that PINS may indeed be an antidote to ACEs and a key to thriving.

References

Appendices

Appendix A: Conceptual framework domains, constructs, and supporting literature

Table 2.A. Conceptual framework domains, constructs, and supporting literature		
Domain / Outcome Area	**Construct**	**Supporting Literature** (to justify inclusion of constructs and instruments) (Y) = Youth literature, (A) = Adult literature
1) Neurocognitive Functioning & Related Behavior	1. Attention	• (Y) RCT showed attention problems improved after 8 MBI sessions, moderate effect size (Semple et al., 2010[650]) • (Y) RCT showed attention training, including MBIs, improved executive function, especially among children with poorest executive functioning (Diamond & Lee, 2011[651]) • (Y) RCT showed MBI improved selective attention using ACTeRs Attention subscale (Napoli, et al., 2005[652]) • (Y) RCT showed that as dispositional mindfulness improved, so did attention task performance (Bögels, et al., 2008[653]; van der Oord, et al., 2012[654]) • (Y) MBI improved attention (Zylowska, et al., 2008[655]) • (Y) Meta-analysis of MBIs showed increased attention (Zoogman, et al., 2014[656])
	2. Behavioral regulation	• (Y) Executive functioning correlates to prosocial behavior (Brock, et al., 2009[657]; Bull, et al., 2008[658]) • (Y) Impaired executive function leads to poor impulse control and disruptive behavior (Anderson, 2002[659]) • (Y) MBI improved behavioral regulation in youth with poorest initial executive functioning, small effect size (Flook, et al., 2010[660]) • (Y) Socioemotional skills – which are taught in many MBIs – help foster prosocial behaviors (Greenberg, et al., 2003[661]; Steinberg, 2009[662]) and prosocial attitudes (Durlak, et al., 2011[663]) • (Y) Dispositional mindfulness and self-control improved with MBIs (Bögels, et al., 2008[664]; van der Oord, et al., 2012[665]) • (Y) Cohort studies showed MBIs improved self-regulation (Barnert, et al., 2014[666]) and decreased problem behavior (Beauchemin, et al., 2008[667]) • (Y) Quasi-experimental studies show MBIs are associated with improved prosocial skills, and reduced externalizing behavior (Sibinga, et al., 2011[668]; Tan and Martin, 2013[669]; Schonert-Reichl & Lawlor, 2010[670]) • (Y) Yoga, breathing, and meditation MBI showed fewer negative behaviors to stress (Berger, et al., 2009[671]) • (Y) RCT provides "…cautious support that MBSR enhances self-regulatory processes for urban male youth, including improved psychological symptoms…" (Sibinga, et al., 2013[672]; in American Academy of Pediatrics, 2016[673])
	3. Metacognition / Executive Function	• (Y) MBIs improved metacognition and overall executive function, especially among children with poorest initial executive functioning (Diamond and Lee, 2011[674]; Flook, et al., 2010[675]) • (Y) Improved executive functioning in youth MBI (Parker, et al., 2014[676])

		• (A) A review of mindfulness meditation and executive functioning (EF) shows improved domains of EF including inhibition, and to a lesser extent working memory updating and mental shifting (Gallant, 2016[677])
2) Psychological Functioning & Related Behavior	Mental health: cross-cutting evidence for numbers 4-8 below →	• (Y) Socioemotional skills – which are taught in many MBIs – help foster emotional health (Greenberg, et al., 2003[678]; Steinberg, 2009[679]) • (Y) MBIs associated with improved emotional well-being (Black, 2005[680]) • (Y) RCT showed MBI improved mental health, especially among those with preintervention mood disorders (Biegel, et al., 2009[681]) • (Y) Dispositional mindfulness associated with psychosocial improvements (Brown, et al., 2011[682]; Tan and Martin, 2013[683]) • (Y) Two 8-week MBIs showed statistically significant improvement in mental quality of life (Whitebird, et al., 2013[684]; Kuyken, et al., 2008[685]; Pbert, et al., 2012[686]) • (Y) Meta-analysis showed that 1) psychological symptoms significantly improved across MBIs; and 2) both sample type (clinical vs. non-clinical) and pre-existing psychological symptoms) moderate observed MBI treatment effects – and that, therefore, "mindfulness may be particularly beneficial for [psychological] clinical populations" (Zoogman, et al., 2014[687]) • (Y) RCT for yoga showed significant mental health benefits (Noggle & Khalsa, 2010[688]) • (Y) RCT showed significant reduction in PTSD severity (Sibinga, et al., 2016[689]) • (Y) RCT provides "…cautious support that MBSR enhances self-regulatory processes for urban male youth, including improved psychological symptoms…" (Sibinga, et al., 2013[690]; in American Academy of Pediatrics, 2016[691]) • (Y) RCT showed aspects of mindfulness (e.g., nonreactivity and nonjudgement) were linked to reduced dysphoric mood (Ciesla, et al., 2012[692])
	4. Perceived Stress	• (Y) RCT showed MBI reduced perceived stress using BRIEF Cope (Biegel, et al., 2009[693]) • (Y) RCTs showed MBIs improved stress-related biomarkers, including systolic and diastolic blood pressure, heart rate, C-reactive protein levels (an inflammatory biomarker) (Gregoski, et al., 2011[694]; Pace, et al., 2013[695]; Barnes, et al., 2001[696]) • (Y) Four 8-week MBIs showed statistically significant improvement in stress/reduction in distress (Whitebird, et al., 2013[697]; Pbert, et al., 2012[698]; Garland, et al., 2010[699]; Ferraioli & Harris, 2013[700]) • (Y) Quasi-experimental studies showed MBIs were associated with improved perceived stress, involuntary stress response, and relaxation (Broderick & Metz, 2009[701]; Himelstein, et al., 2012[702]; Kerrigan, et al., 2011[703]; Lau & Hue, 2011[704]; Mendelson, et al., 2010[705]; in Black, 2005[706]) • (Y) RCT showed less mindful individuals were vulnerable to negative effects of stress; and rumination moderated the relationship between mindfulness and stress moderation (Ciesla, et al., 2012[707]) • (Y) Pre/post-test showed improved perceived stress, and an inverse relationship between self-compassion taught within MBIs and perceived stress (Bluth, et al., 2015[708]) • (Y) MBI improved distress tolerance, stress reactivity, and resilience to stress (Bostic, et al., 2015[709]) • (A) RCT showed mindfulness meditation improved stress (Oman, et al., 2010[710]) • (A) RCT showed MBI increased mindfulness, which mediated reduction in perceived stress in college students (Shapiro, et al., 2008[711])
	5. Coping	• (Y) Socioemotional skills – which are taught in many MBIs – help foster adaptive conduct (Greenberg, et al., 2003[712]; Steinberg, 2009[713])

		• (Y) RCT found MBI had positive impact on problematic responses to stress, including involuntary stress response, rumination, intrusive thoughts, and emotional arousal using CRSQ (Mendelson, et al., 2010[714]) • (Y) RCT showed improved coping with MBSR program (Sibinga, et al., 2013; American Academy of Pediatrics, 2016[715]) • (Y) RCT showed significant reduction in negative coping, rumination, and self-hostility (Sibinga, et al., 2016[716]) • (A,Y) MBIs have been linked to improved coping processes, including reduced rumination and maladaptive coping, and increased adaptive coping (Perry-Parrish, et al., 2016[717]) • (Y) Cohort study showed MBI associated with improved substance use resistance self-efficacy (i.e., positive coping) (Britton, et al., 2014[718]) • (A) RCT showed MBI increased mindfulness, which mediated reduction in rumination in college students (Shapiro, et al., 2008[719])
	6. Emotion regulation	• (Y) Socioemotional skills – which are taught in many MBIs – help people recognize and manage emotions (Durlak, et al., 2011[720]) • (Y) MBIs associated with improved emotion regulation (Black, 2005[721]) • (Y) Quasi-experimental studies show MBIs are associated with improved externalizing behaviors (Sibinga, et al., 2011[722]; Tan and Martin, 2013[723]) • Y) MBI "increases… neural activity and gray-matter volume in [brain] regions implicated in socioemotional functioning, including the frontoinsular, prefrontal, and limbic regions" (Black, 2005[724]; Hölzel, 2011[725]) • (Y) Quasi-experimental studies show MBIs are associated with improved emotional regulation/reactivity (Coholic, et al., 2012[726]) • (Y) RCT found MBI had positive impact on problematic responses to stress, including emotional arousal (Mendelson, et al., 2010[727])
	7. Anxiety symptoms	• Mindfulness programs have shown to affect amygdala volume, resulting in anxiety reduction (Holzel, et al., 2010[728]; in McEwen, et al., 2016[729]) • (Y) RCT showed MBI reduced anxiety symptoms (Biegel, et al., 2009[730]) • (Y) RCT showed MBI reduced anxiety symptoms (Liehr and Diaz, 2010[731]) • (Y) RCT showed MBI reduced anxiety in youth with clinically elevated preintervention anxiety (Semple, et al., 2010[732]) • (A) Pre/post-test findings of a cognitive-behavioral MBI with clinical adult patients showed improvements in anxiety (Craner, et al., 2016[733]) • (Y) After negative moods, a single MBI session can get youth out of a ruminative state (Hilt & Pollak, 2012[734]), which is strongly associated with anxiety (Muris, et al., 2004[735]) • (Y) Quasi-experimental studies show MBIs are associated with improved anxiety (Sibinga, et al., 2011[736]; Tan and Martin, 2013[737]) • (Y) Childhood stressors predict dysregulated HPA axis and neuropeptide function key to psychopathology, such as anxiety and mood disorders (Bremner, et al., 2003[738]; Heim & Nemeroff, 2001[739]; Tyrka, et al., 2008[740]) • (Y) Four 8-week MBIs showed statistically significant improvement in anxiety ((A) Gaylord, et al., 2011[741]; (A) Schmidt, et al., 2011[742]; Lee, et al., 2007[743]; Hoge, et all, 2013[744]; in Goyal, et al., 2014[745])
	8. Depressive symptoms	• (Y) RCT showed MBI reduced depressive symptoms (Biegel, et al., 2009[746]) • (Y) RCT showed MBI reduced depressive symptoms (Liehr and Diaz, 2010[747]) • (Y) 4 8-week MBIs showed statistically significant improvement in depression (Henderson, et al., 2012[748]; Whitebird, et al., 2013[749]; in Goyal, et al., 2014[750]; Chiesa, et al., 2012[751]) • (Y) RCT showed significant reduction in depression (Sibinga, et al., 2016[752])

		• (Y) RCT of mindfulness-based cognitive therapy intervention protected against relapse to clinical depression for youth with history of childhood trauma, but not across all participants with recurrent depression (Williams, et al., 2014[753]) • (Y) Some mixed results: two RCTs show depressive symptoms decreased with both CBT-based MBI and usual treatment (Poppelaars, et al.[754], 2016; Shirk, et al., 2013[755]) • (A) Pre/post-test findings of a cognitive-behavioral MBI with clinical adult patients showed improvements in depression (Craner, et al., 2016[756])
3) Social Functioning & Related Behavior	9. Compassion	• (Y) Interventions that include mindfulness practices help "familiarize[e] youth with their changing bodies and minds and… afford… them conscious and compassionate ways of relating to their changing natures and those of their peers"[757,758] • (Y) Socioemotional skills – which are taught in many MBIs – help foster empathy (Durlak, et al., 2011[759]) • (A) RCT showed mindfulness meditation improved forgiveness (Oman, et al., 2010[760])
	10. Communication skills	• (Y) RCT showed MBI reduced interpersonal sensitivity (Biegel, et al., 2009[761]) • (Y) Quasi-experimental studies show MBIs are associated with improved hostility (Sibinga, et al., 2011[762]; Tan and Martin, 2013[763]) • (Y) MBI improved teacher reported student social competence (Schonert-Reichl, et al., 2010[764]) • (Y) MBI improved social skills (Napoli, et al., 2005[765]) • Research on Acceptance and Commitment Therapy (ACT), which has been increasingly operationalized in MBIs, holds that psychological inflexibility is attributed to cognitive fusion: "excessive or improper regulation of behavior by verbal processes, such as rules and derived relational networks" (Hayes, et al., 2006[766]). ACT can help to improve regulation and behavior linked to verbal processes.
	11. Connectedness	• (Y) MBIs associated with improved interpersonal relationships (Black, 2005[767]) • (Y) Socioemotional skills – which are taught in many MBIs – help people maintain positive interpersonal relationships (Durlak, et al., 2011[768]) • (Y) Quasi-experimental studies show MBIs are associated with improved externalizing behaviors that can compromise connectedness (e.g., aggression, cheating, stealing) (Sibinga, et al., 2011[769]; Tan and Martin, 2013[770]) • (Y) Cohort study showed an MBI was associated with qualitative improvements in relationships (Sibinga, et al., 2011[771]) • (Y) Mentoring relationship quality significantly associated with, and plays a mediating role in, fostering positive youth-parent and youth-teacher relationships, leading to better outcomes, such as self-esteem, academic attitudes, prosocial behaviors, and less misconduct (Chan, et al., 2013[772]); given strong mentorship role of PINS teachers, connectedness with parents, teachers, and peers is hypothesized to improve as a result of the program
4) Life Outcomes (*considered, but ultimately not included*)	12. Academic achievement	• (Y) Executive functioning correlates with school readiness and academic achievement (Brock, et al., 2009[773]; Bull, et al., 2008[774]) • (Y) Impaired executive function leads to poorer working memory and failure to complete tasks – making one more likely to perform poorly in school (Anderson, 2002[775]) • (Y) RCT showed transcendental meditation MBI reduced school absenteeism, rule infractions, and suspension rates (Barnes, et al., 2003[776]) • (Y) Positive emotions associated with academic interest and achievement; negative emotions associated with poorer academic performance and high school completion (Pekrun, et al., 2002[777]; Roeser, et al., 1999[778]) • (Y) Cohort study showed MBI associated with qualitative improvements in schoolwork (Sibinga, et al., 2011[779]) • (Y) Emotion regulation predicts academic success and standardized test performance (Graziano, et al., 2007[780])

		• (Y) Socioemotional skills – which are taught in many MBIs – help foster academic achievement (Greenberg, et al., 2003[781]; Steinberg, 2009[782]) • Socioemotional learning programs – which teach skills similar to many MBIs – improved academic test scores and course grades (Durlak, et al., 2011[783])
Potential moderators	ACEs score	• (Y) Childhood traumatic stress leads to elevated cortisol and HPA axis dysregulation; mindfulness stress management training may help them regulate psychobiological stress reactivity (Chicchetti & Rogosch, 2001[784]; Lupien, et al.[785], 2005; Tarullo & Gunnar, 2006[786]; Bremner, et al., 2003[787]; Tyrka, et al., 2008[788]) • (Y) Meta-analysis showed that both sample type (clinical vs. non-clinical) and pre-existing psychological symptoms) moderate observed MBI treatment effects; given known association between ACEs score clinical mental disorders, it is likely that ACEs score also moderates (or may act as a proxy for) MBI treatment effects – and that, therefore, "mindfulness may be particularly beneficial for clinical populations" (Zoogman, et al., 2014[789]) • (Y) RCT of mindfulness-based cognitive therapy intervention protected against relapse to clinical depression for youth with history of childhood trauma, but not across all participants with recurrent depression (Williams, et al., 2014[790])
	ACEs exposure	• Evidence that "high-quality, structured mindfulness instruction might mitigate the negative effects of stress and trauma related to adverse childhood exposures, improving [youth and adult health] outcomes…" (Ortiz and Sibinga, 2017[791]) • (Y) RCT of mindfulness-based cognitive therapy intervention protected against relapse to clinical depression for youth with history of childhood trauma, but not across all participants with recurrent depression (Williams, et al., 2014[792]) • (Y) Abused/traumatized young adults reported receiving less emotional support (McNulty, et al., 2004[793])
	Class dosage	• (Y) Dosage of sitting mindfulness practice associated with improved depressive and anxiety symptoms (Biegel, et al., 2009[794]) • (Y) RCT showed inverse dose response of morning C-reactive protein levels (an inflammatory biomarker) with more MBI homework practice sessions (Pace, et al., 2013[795])
	Readiness for change	• Transtheoretical Model (TTM) behavioral processes of change acted as a mediator for health behavior changes (Papadonatos, et al., 2012[796]); these behavioral processes of change include counterconditioning to learn healthier behaviors, stimulus control or removing cues for unhealthy behaviors, contingency management, and establishing and maintaining helping relationships (Glanz, et al., 2008[797])
Covariates	School	
	Grade	• There are age-specific associations between adverse life events and functional bodily symptoms in the general population (Tak, et al.,[798])
	Sex	• There are sex-specific associations between adverse life events and functional bodily symptoms in the general population (Tak, et al.,[799])
	Gender identity	*As noted above, there are disparities in ACEs by gender, sexual orientation, race/ethnicity, nativity, and SES.* • (Y) ACEs impact youth at all socioeconomic levels, but a greater proportion of children experience ACEs at lower income strata[800]
	Sexual orientation	
	Race	
	Hispanic ethnicity	
	Nativity	

	Socioeconomic status (SES) – Free / reduced lunch eligibility	
	Socioeconomic status (SES) –Parent education level	

Appendix B: Interview Guides

Interview Guide: Brief Interview with Parents

JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH
BRIEF INTERVIEW GUIDE – Parents

Study Title:	Adverse Childhood Events (ACEs), Mindfulness, and Adolescent Health: Assessing How the Peace in Schools Program Is Implemented and Affects Student Health in Portland Public High Schools
PI:	Dr. Kristin Mmari (Supervising Gia Naranjo-Rivera's dissertation study)
IRB No.:	IRB00008608
PI Version Number/Date:	Version 03, July 21, 2018

"Hello. My name is Gia Naranjo-Rivera, and I'm doing a study about the Peace in Schools Program that your child is currently a part of. As part of this, I am asking parents/guardians who speak and understand English to participate in a brief 15-minute phone interview. In this interview, I'm going to ask questions about what you or your child like about Peace in Schools, what you don't like, and any suggestions for improving the program. I do not want you to tell me anything personal about yourself. Also, you may choose not to answer any question that I ask, and you may end the interview any time without any negative consequences.

{*If the parent does not speak or understand English and is not a Spanish-speaker*: If you prefer to participate in a language other than English, you will not be able to participate in the interview. Unfortunately, we do not have enough funding to translate the interview into multiple languages. Thank you for your time. Have a nice day!}

{*If the parent does not speak or understand English and is a Spanish-speaker, the following will be read in Spanish as written below*: [English translation] If you prefer to participate in a language other than English, you will not be able to participate in the interview. However, we *may* be able to offer parent focus groups if there are enough parents interested in participating in a focus group in Spanish and if we are able to obtain additional funding. Would you like to be put on a list to possibly be invited to participate in a Spanish focus group (or group discussion) for parents? Thank you for your time. Have a nice day!

Si prefiere participar en un idioma que no sea inglés, no podrá participar en la entrevista porque este estudio no cuenta con fondos suficientes para la traducción. Sin embargo, *podríamos* ofrecer grupos focales de padres en español si hay interés y fondos suficientes. ¿Le gustaría que lo/a pusiera en una lista para posiblemente ser invitado a participar en un grupo focal (o grupo de discusión) en español para padres? Gracias por su tiempo. ¡Que tenga un buen día!}

As you may know, students are also being invited to participate in the study by completing a survey and participating in focus groups, so we can gather student perspectives on the class. Students and parents do not have to participate together. You can participate even if your child does not want to participate, and your child can participate even if you do not want to participate. If you and your child both decide to participate, no information that either of you provide in the study will be shared with the other, except in rare cases when we are legally required to do so (for example, if your child shares that they or someone else is being harmed).

With your permission, the interview will be audio-recorded and typed up (or "transcribed"). You will not be identified by name on the recording or in the transcript. The recordings are confidential: only the study team members will listen to them and they will be destroyed after they have been transcribed. I will not collect any personal information that could easily identify you or your child, and if you use your true name or share information that can identify you or your child, it will be removed when the recordings are transcribed. If you do not want to be audio-recorded, I will take notes instead.

All research projects carry some risk that information about you may become known to people outside a study. However, we will do our best to protect your identity. Your name will not be attached to the personal information you give us or to any of the comments that you share during the interview. What you say will be summarized along with what other parents/guardians say.

Do you have any questions before we begin?"

Brief Interview Topics and Questions

Understanding of the Mindful Studies class

1) What do you know about the Peace in School Mindful Studies class? How would you describe it to a stranger in one or two sentences?

Child's interest mindfulness

2) Why did your child choose to take the Mindful Studies class?
    a. Did your child have any previous experience with mindfulness before this class?

Mindful Studies class content

3) What is your child learning in the Mindful Studies class?
    a. Are there any specific tools, ideas, or practices that your child has mentioned learning in the Mindful Studies class?
    b. Have you seen them using tools, ideas, or practices from the class?

Impacts of the Mindful Studies class

4) Has the Mindful Studies class impacted (or led to changes in) your child?
    a. Have you noticed any changes in your child that you believe have been influenced by the class – for example, in the way they think, feel, behave, or interact?

Value/importance of the Class

5) How important do you think it is for your child to take this class, and why?
    a. Do you see any benefits or harms that may come from your child taking this class?
    b. How important is learning mindfulness compared to other classes or skill sets your child might learn? (e.g., in academic courses, other elective courses, extracurricular activities, etc.)

Conclusion

6) Do you have any other comments you would like to share?
    [Alternative: Is there anything else you wish I would have asked you?]

Thank you for taking time to complete this interview.

Interview Guide: PINS Teachers and Trainers, and PPS Co-teachers

JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH
IN-DEPTH INTERVIEW GUIDE – Facilitators and Trainers

Study Title:	Adverse Childhood Events (ACEs), Mindfulness, and Adolescent Health: Assessing How the Peace in Schools Program Is Implemented and Affects Student Health in Portland Public High Schools
PI:	Dr. Kristin Mmari (Supervising Gia Naranjo-Rivera's dissertation study)
IRB No.:	IRB00008608
PI Version Number/Date:	Version 01, June 12, 2018

"Hello. My name is Gia Naranjo-Rivera, and I'm doing a study about the Peace in Schools Program. As part of this, I am asking Peace in Schools teachers and trainers to participate in an in-depth interview. In this interview, I'm going to ask questions about your previous experience with mindfulness, your experience as a teacher and/or trainer at Peace in Schools, what impacts you see the program having, its strengths and weaknesses, and any suggestions for improving the program. The interview should last about 60 minutes. I do not want you to tell me anything personal about yourself. Also, you may choose not to answer any question that I ask, and you may end the interview any time without any negative consequences.

With your permission, the interview will be audio-recorded and typed up (or "transcribed"). You will not be identified by name on the recording or in the transcript. The recordings are confidential: only the study team members will listen to them and they will be destroyed after they have been transcribed. I will not collect any personal information that could easily identify you, and if you use your true name or share information that can identify you or someone else, it will be removed when the recordings are transcribed.

Do you have any questions before we begin?"

Interview Topics and Questions

History with mindfulness and current position with Peace in Schools

1) **What is your role(s) with Peace in Schools (PINS)?**
   a. How long have you been working with PINS?
   b. What previous positions have you had with PINS?
   c. If you are involved in more than one way, how do your roles differ?

2) **Before PINS, had you been involved in other types of mindfulness programs? If so, could you describe them a bit for me?**

Motivation for involvement with youth mindfulness programs

3) **What made you decide to become involved in PINS?**
   a. Why mindfulness, versus a different type of youth-focused program/intervention?
   b. Why teenaged youth, versus a different age group?

Understanding of the Mindful Studies class

4) **How would you define mindfulness in one or two sentences?**

5) **What do youth learn in the Mindful Studies class?**
   a. What tools, ideas, or practices are taught?
   b. Which seem to be most well received/effective? What are the reasons for this?
   c. Is there learning that happens beyond what is outlined in the curriculum?

Training

6) **[For facilitators/teachers] What did/does your Mindful Studies teacher training consist of?**
   a. How frequently did/does training occur? How long was/is each training session?
   b. What are the strengths of the current training model/approach?
   c. How might the current training model/approach be improved?

7) **[For PINS trainers only] What has your experience been providing training to others?**
   a. How long have you been a trainer?
   b. What was the process to become a trainer?
   c. What is the design (format and frequency) of training currently?
   d. What are the strengths and limitations of the current training model?

Reach and young people's reasons for taking the class

8) **What leads youth to take the Mindful Studies class?**
   a. How might this differ by different types of youth characteristics?

9) **What types of students most often take the class?**
   a. Who is the class reaching?
   b. Who is least likely to take the class? Who is the class not reaching?
   c. What groups are most likely to benefit from this program, and why?
      i. If they are not being reached, what could be done to reach these youths?

Impacts

10) **How does PINS try to change (or help) youth?**
   a. What are the benefits of mindfulness-based programs, if any?
   b. What are the potential harms of mindfulness-based programs, if any?
   c. How important is learning mindfulness compared to other classes or skill sets youth might learn? (e.g., academic courses, other elective courses, extracurricular activities)
   d. What is the importance of mindfulness in the current time and context?

11) **What impacts has the PINS program had on youth you work/have worked with?**
   a. Have you noticed any changes in youth that you believe have been influenced by PINS at an individual level (e.g., in the way they think, feel, or experience the world)?
   b. Have you noticed changes at the family, peer, or community level (e.g., in the way they behave, communicate, or interact with others)?

12) **What youth are most likely to benefit from the program? What are the reasons for this?**

a. Are there youth who may not benefit from the program? What might be the reasons behind this?
b. Are there other audiences or contexts (other than schools), where do you see where mindfulness programs may be most beneficial?

13) How has teaching mindfulness to youth impacted you or your own mindfulness practice(s)? Could you describe that a bit to me?

14) What do you think are the ideal outcomes of PINS?
a. Are these the same for youth mindfulness-based programs in general?

Contextual factors, successes and challenges

15) What are the key strengths of PINS? What worked particularly well?
a. To what extent do you think these components can be transferred to other types of mindfulness programs?
b. What about the main weaknesses?

16) What factors are most important for program success…
a. Within the classroom? (e.g., teachers, classroom environment, the physical space or equipment, amount of time, teacher-student interactions, etc.)
b. Beyond the classroom? (e.g., support from school or District leadership, parent and student buy-in, type and frequency of teacher trainings, funding, etc.)
c. What major challenges have you faced?

Ways to strengthen or improve youth mindfulness programs

17) Do you have any suggestions to improve the implementation of the Mindful Studies class?
e. If so, what specifically do think could be improved in terms of class...
    i. Promotion, communications, and education?
    ii. Management and organization?
    iii. Implementation?
    iv. Other aspects of the class/program?
f. How do you think mistakes or pitfalls might be avoided, or planned for to achieve better outcomes (reach, impact, effectiveness, sustainability, etc.)?

Conclusion

Do you have any other comments you would like to share?
[Alternate wording: Is there anything else you wish I would have asked you?]

Who else would you suggest I talk to about the Mindful Studies class and youth MBIs?

Thank you for taking time to complete this interview.

Interview Guide: School Staff and Policymakers

JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH
IN-DEPTH INTERVIEW GUIDE – School Officials

Study Title:	Adverse Childhood Events (ACEs), Mindfulness, and Adolescent Health: Assessing How the Peace in Schools Program Is Implemented and Affects Student Health in Portland Public High Schools
PI:	Dr. Kristin Mmari (Supervising Gia Naranjo-Rivera's dissertation study)
IRB No.:	IRB00008608
PI Version Number/Date:	Version 01, June 12, 2018

"Hello. My name is Gia Naranjo-Rivera, and I'm doing a study about the Peace in Schools Program. As part of this, I am asking school staff, such as principals and school counselors, to participate in an in-depth interview. In this interview, I'm going to ask questions about your understanding of the Peace in Schools program, what impacts you see the program having, its strengths and weaknesses, and any suggestions for improving the program. The interview should last about 60 minutes. I do not want you to tell me anything personal about yourself. Also, you may choose not to answer any question that I ask, and you may end the interview any time without any negative consequences.

With your permission, the interview will be audio-recorded and typed up (or "transcribed"). You will not be identified by name on the recording or in the transcript. The recordings are confidential: only the study team members will listen to them and they will be destroyed after they have been transcribed. I will not collect any personal information that could easily identify you, and if you use your true name or share information that can identify you or someone else, it will be removed when the recordings are transcribed.

Do you have any questions before we begin?"

Interview Topics and Questions

Current position and involvement with the Mindful Studies class

1) **What is your role(s) at _____ [school or organization name]?**
   a. How long have you been working with _____?
   b. What previous positions have you had at this school or other youth-serving organizations?

2) **What has your involvement been / What role have you played with the Peace in Schools Mindful Studies class at _____ [school or organization name]?**

Understanding of the Mindful Studies class

3) **How would you describe the Mindful Studies class in one or two sentences?**

4) **From you understanding, what do youth learn in the Mindful Studies class?**
   a. What tools, ideas, or practices are taught?

b. Is there learning that happens beyond what is outlined in the curriculum?

5) **Do you believe school staff and teachers, parents, and students who are not taking/have not taken it understand what the Mindful Studies class consists of?**

Reach and young people's reasons for taking the class

6) **What leads youth to take the Mindful Studies class?**

7) **What types of students most often take the class?**
   a. Who is the class reaching?
   b. Who is least likely to take the class? Who is the class not reaching?
   c. What groups are most likely to benefit from this program, and why?
      i. If they are not being reached, what could be done to reach these youths?

Impacts

8) **Do you think youth mindfulness-based programs are important? Why or why not?**
   a. What are the benefits of mindfulness-based programs, if any?
   b. What are the potential harms of mindfulness-based programs, if any?
   c. How important is learning mindfulness compared to other classes or skill sets youth might learn? (e.g., academic courses, other elective courses, extracurricular activities)

9) **What impacts has the Mindful Studies class had on youth you work/have worked with?**
   a. Have you noticed any changes in youth that you believe have been influenced by the class at an individual level (e.g., in the way they think, feel, or experience the world)?
   b. Have you noticed changes at the family, peer, or community level (e.g., in the way they behave, communicate, or interact with others)?

10) **What do you think are the ideal outcomes of youth mindfulness programs (in general and/or specifically Peace in Schools Mindful Studies Class)…**
   a. **For the youth who participate?**
      [Alternate wording: What you do think the programs should do for the youth that participate? What would the ideal outcome be for these youth/what should young people take away?]
   b. **Beyond the individual students, including the young people's families, peers, schools, clubs/sports teams, religious organizations, communities, etc.?**
      [Alternate wording: Do you think the program should aim to accomplish something at the family, peer/school, or community level? If so, what do you think the idea outcomes would be at these levels?]
   c. Is the Mindful Studies class currently leading to these outcomes?
   d. What could be done to ensure that the Mindful Studies class leads to these outcomes?

Contextual factors, successes and challenges

11) **In what ways has the Mindful Studies Class been successful within and beyond the classroom?**

12) **What challenges have you faced in offering/supporting the Mindful Studies class?**

[Alternate wording: Broadly speaking, do you think there were ways in which the program wasn't successful, or where you consistently faced challenges?]

13) **What factors are most important for program success…**
    a. **Within the classroom?** (e.g., teachers, classroom environment, the physical space or equipment, amount of time, teacher-student interactions, etc.)
    b. **Beyond the classroom?** (e.g., support from school or District leadership, parent and student buy-in, type and frequency of training, funding, etc.)

14) **Having been involved with mindfulness programs, are there other audiences or applications you see where mindfulness programs may be beneficial?**

Ways to strengthen or improve youth mindfulness programs

15) **Do you have any suggestions to improve the implementation of the Mindful Studies class?**
    a. If so, what specifically do think could be improved in terms of…
        i. Promotion, communications, and education?
        ii. Management and organization?
        iii. Implementation?
        iv. Other aspects of the class/program?
    b. How do you think mistakes or pitfalls might be avoided, or planned for to achieve better outcomes (reach, impact, effectiveness, sustainability, etc.)?

Conclusion

16) **Do you have any other comments you would like to share?**

[Alternate wording: Is there anything else you wish I would have asked you?]

17) **Who else would you suggest I talk to about the Mindful Studies class and youth mindfulness-based programs?**

Thank you for taking time to complete this interview.

Interview Guide: Youth MBI Experts

JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH
IN-DEPTH INTERVIEW GUIDE – Youth Mindfulness-based Intervention Practitioners

Study Title:	Adverse Childhood Events (ACEs), Mindfulness, and Adolescent Health: Assessing How the Peace in Schools Program Is Implemented and Affects Student Health in Portland Public High Schools
PI:	Dr. Kristin Mmari (Supervising Gia Naranjo-Rivera's dissertation study)
IRB No.:	IRB00008608
PI Version Number/Date:	Version 01, June 12, 2018

"Hello. My name is Gia Naranjo-Rivera, and I'm doing a study about the Peace in Schools Program. As part of this, I am asking youth mindfulness-based intervention (MBI) practitioners to participate in an in-depth interview. In this interview, I'm going to ask questions about your involvement in youth mindfulness programs, what impacts you have seen them had on young people, its strengths and weaknesses, and any suggestions for improving the program. The interview should last about 60 minutes. I do not want you to tell me anything personal about yourself. Also, you may choose not to answer any question that I ask, and you may end the interview any time without any negative consequences.

With your permission, the interview will be audio-recorded and typed up (or "transcribed"). You will not be identified by name on the recording or in the transcript. The recordings are confidential: only the study team members will listen to them and they will be destroyed after they have been transcribed. I will not collect any personal information that could easily identify you, and if you use your true name or share information that can identify you or someone else, it will be removed when the recordings are transcribed.

Do you have any questions before we begin?"

Interview Topics and Questions

History with mindfulness and current position

1) **When did you first become involved in mindfulness? What did you do?**

2) **Can you tell me about your current position?**
   a. What is the organization?
   b. What are your roles/activities?
   c. Who is your audience?

3) **How are you/have you been involved in youth mindfulness programs?**

Motivation for involvement with youth mindfulness programs

4) **What made you decide to become involved in youth mindfulness programs?**
   a. Why mindfulness (versus a different type of youth-focused program/intervention)?
   b. Why the age group you work with (such as youth, versus a different age group)?

Understanding of mindfulness-based interventions

5) **How would you define/describe mindfulness in one or two sentences?**

6) **What do/should youth/people learn in a mindfulness-based program?**
   a. What tools, ideas, or practices seem to be most well received/effective?
   b. How do these get transmitted outside the classroom?
   c. Is there learning that happens beyond what is outlined a program curriculum?

Training

7) **[For facilitators/teachers] What did/does your mindfulness facilitator training consist of?**
   a. How frequently did/does training occur? How long was/is each training session?
   b. What are the strengths of the current training model/approach?
   c. How might the current training model/approach be improved?

8) **[For trainers] What has your experience been providing training to others?**
   a. How long have you been a trainer?
   b. What was the process to become a trainer?
   c. What is the design (format and frequency) of training currently?
   d. What are the strengths and limitations of the current training model?

Reach and young people's reasons for getting involved in mindfulness programs

9) **What leads youth/people to get involved in mindfulness programs?**
   a. How might this differ by different types of youth characteristics?

10) **What types of youth/people most often get involved in mindfulness programs?**
   a. Who is the class reaching?
   b. Who is least likely to take the class? Who is the class not reaching?
   c. What groups are most likely to benefit from this program, and why?
      i. If they are not being reached, what could be done to reach these youths?

Impacts

11) **How does PINS try to change (or help) youth?**
   a. What are the benefits of mindfulness-based programs, if any?
   b. What are the potential harms of mindfulness-based programs, if any?
   c. How important is learning mindfulness compared to other classes or skill sets youth might learn? (e.g., academic courses, other elective courses, extracurricular activities)
   d. What is the importance of mindfulness in the current time and context?

12) **What impacts has mindfulness had on youth/people you work/have worked with?**
   a. Have you noticed any changes that you believe have been influenced by the class at an individual level (e.g., in the way they think, feel, or experience the world)?
   b. Have you noticed changes at the family, peer, or community level (e.g., in the way they behave, communicate, or interact with others)?

13) **What youth are most likely to benefit from mindfulness programs? What are the reasons for this?**
    a. Are there youth who may not benefit? What might be the reasons behind this?
    b. In what contexts do you see mindfulness programs being most beneficial?

14) **How has teaching mindfulness to youth impacted you or your own mindfulness practice(s)? Could you describe that a bit to me?**

15) **What do you think are the ideal outcomes of mindfulness programs?**

Contextual factors, successes and challenges

16) **What are the key strengths of the youth mindfulness programs you have been a part of? What worked particularly well?**
    a. To what extent do you think these components can be transferred to other types of mindfulness programs?
    b. What about the main weaknesses?

17) **What factors are most important for program success…**
    a. Within the classroom? (e.g., teachers, classroom environment, the physical space or equipment, amount of time, teacher-student interactions, etc.)
    b. Beyond the classroom? (e.g., support from school or District leadership, parent and student buy-in, type and frequency of teacher trainings, funding, etc.)
    c. What major challenges have you faced?

Ways to strengthen or improve youth mindfulness programs

18) **Do you have any suggestions to improve the implementation of mindfulness-based programs?**
    a. If so, what specifically do think could be improved in terms of class...
        i. Promotion, communications, and education?
        ii. Management and organization?
        iii. Implementation?
        iv. Other aspects of the class/program?
    b. How do you think mistakes or pitfalls might be avoided, or planned for to achieve better outcomes (reach, impact, effectiveness, sustainability, etc.)?

Conclusion

Do you have any other comments you would like to share?
[Alternate wording: Is there anything else you wish I would have asked you?]

Who else would you suggest I talk to about the Mindful Studies class and youth mindfulness-based programs?

Thank you for taking time to complete this interview.

Appendix C: Focus Group Guides

Focus Group Guide: Students

JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH
QUESTIONS FOR FOCUS GROUP DISCUSSIONS (FGD) WITH CURRENT STUDENTS

PI:	Dr. Kristin Mmari (Supervising Gia Naranjo-Rivera's dissertation study)
Study Title:	Adverse Childhood Events (ACEs), Mindfulness, and Adolescent Health: Assessing How the Peace in Schools Program Is Implemented and Affects Student Health in Portland Public High Schools
IRB No.:	IRB00008608
PI Version Number/Date:	Version 02, July 21, 2018

"Hello. My name is Gia Naranjo-Rivera, and I'm doing a study about the Peace in Schools Program. As part of this, you will be asked to be in a focus group. A focus group is a small discussion group (up to 12 people) brought together to share thoughts on a specific topic. For this focus group, I'm going to be asking you questions about what you liked about Peace in Schools, what you didn't like, and any suggestions for improving the program. This focus group should last about 60 minutes. We do not want you to tell us anything personal about yourself. Also, you may choose not to answer any question that we ask, and you may leave the discussion at any time without any negative consequences.

As a reminder, parents/guardians are also being invited to participate in brief phone interviews and parent focus groups separately from students, so we can gather their perspectives on the Mindful Studies class. Students and parents do not have to participate together. You can participate even if your parent does not want to participate, and your parent can participate even if you do not want to participate. If you and your parent both decide to participate, no information that either of you provide in the study will be shared with the other. There are only a few exceptions when we may have to share some information a student shares in the study with their parent/guardian or other authorities (for example, if you share that you or someone else is being harmed we are legally required to make a report to the appropriate authorities).

With your permission, the group session will be audio-recorded and typed up (or "transcribed"). You will not be identified by name on the recording or in the transcript. You may use a fake name during the discussion, and we ask that you not refer to other people by their true names. The recordings are confidential: only the study team members will listen to them and they will be destroyed after they have been transcribed. We will not collect any personal information that could easily identify you, and if anyone uses your true name or shares information that can identify you, it will be removed when the recordings are transcribed.

All research projects carry some risk that information about you may become known to people outside a study. However, we will do our best to protect your identity and comments made during the group discussion. Your name will not be attached to the personal information you give us or to any of the comments that you share during the group discussion. What you say will be summarized along with what others say. Comments made by others during the group discussion should not be discussed with people outside the group. However, we cannot guarantee that participants will keep things confidential.

Do you have any questions before we begin?"

Topics and Questions

- **Interest in and previous/current involvement with mindfulness, and motivation and reasoning for the student's participation in the Mindful Studies class**
  1) What was your experience with mindfulness before taking the Mindful Studies class?

  2) How did you become involved in, or choose to take, the Mindful Studies class?

- **Perceived impacts of the program on students individually and on interpersonal interactions**
  3) Have you noticed any changes in yourself – for example, in the way you think, feel, behave, or experience things in your life – that you think have been influenced by the class?

  4) Have you noticed any changes in the way you or your classmates treat others that have been influenced by the class?
     a. How would you describe changes in how you treat your friends, family, or strangers, if any?
     b. How would you describe changes in the way your classmates treat others, if any?
     c. How would you describe changes in the way people treat each other at your school (outside of this class), if any?

- **Tools, ideas, or practices learned in class that have been most useful**
  5) What specific tools, ideas, or practices that you learned in the class have been most useful?
     a. Can anyone here give me an example of how they have used used a technique from this class in their daily life?
     b. How did you use it?
     c. Why did you find the tool or practice useful?

- **Perceptions of the benefits and detriments of the Mindful Studies class**
- **Strengths and weaknesses of the Mindful Studies class**
  6) What did you like best about the Mindful Studies class? What was your favorite part?
     a. Why did you like this part of the class?

  7) What are some of the things you didn't like about the Mindful Studies class?
     a. Can you tell me the reasons?

  8) How would you describe this class to others?

  9) Who do you think should take this class? [Alternate: Who do you think this class would most benefit/be most helpful for?]
     a. What are the reasons you think _____ should take this class?
     b. Why do you think it would be most helpful for _____ to take this class?

- **Opinions on the class design and delivery, including the class environment, teachers, and frequency and duration**
  10) How would you describe the class environment, including the physical space where the class is held and the agreements the class agrees to follows in their interactions (called "the environment of C.A.R.E.")?
     a. Did you like or dislike the space location, and how the space looked and felt? Do you think the space affected the way students felt and behaved in class?

b. Did you like or dislike the "environment of C.A.R.E."? Do think it affected the way students felt and behaved in class?

11) How effective do you think your teachers were at teaching mindfulness?

12) How would you describe the way the teachers interacted with students?
    a. How did this make you feel, or shape your class experience?

13) Tell me your thoughts about the following:
    a. The frequency of the class? (meaning "how often you met")
    b. The amount of time spent on each lesson? (e.g., too little, too much, just right)
    c. The amount of time spent learning about mindfulness versus doing mindful movement?

- **Suggestions on improvements to strengthen Mindful Studies classes in the future**

14) What are some suggestions for improving the Mindful Studies class?

Focus Group Guide: Parents (*approved but not conducted due to resource limitations*)

JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH
QUESTIONS FOR FOCUS GROUP DISCUSSIONS (FGD) WITH PARENTS

PI:	Dr. Kristin Mmari (Supervising Gia Naranjo-Rivera's dissertation study)
Study Title:	Adverse Childhood Events (ACEs), Mindfulness, and Adolescent Health: Assessing How the Peace in Schools Program Is Implemented and Affects Student Health in Portland Public High Schools
IRB No.:	IRB00008608
PI Version Number/Date:	Version 02, July 21, 2018

"Hello. My name is Gia Naranjo-Rivera, and I'm doing a study about the Peace in Schools Program. As part of this, you will be asked to be in a focus group. A focus group is a small discussion group (up to 12 people) brought together to share thoughts on a specific topic. For this focus group, I'm going to be asking you questions about how your got involved in the Peace in Schools Mindful Studies class, what changes (if any) you have observed in your child as a result of their participation in the class, and the strengths and weaknesses of the class. This focus group should last about 60 minutes. We do not want you to tell us anything personal about yourself. Also, you may choose not to answer any question that we ask, and you may leave the discussion at any time without any negative consequences.

As a reminder, students are also being invited to participate in the study by completing a survey and participating in focus groups, so we can gather student perspectives on the class. Students and parents do not have to participate together. You can participate even if your child does not want to participate, and your child can participate even if you do not want to participate. If you and your child both decide to participate, no information that either of you provide in the study will be shared with the other, except in rare cases when we are legally required to do so (for example, if your child shares that they or someone else is being harmed).

With your permission, the group session will be audio-recorded and typed up (or "transcribed"). You will not be identified by name on the recording or in the transcript. You may use a fake name during the discussion, and we ask that you not refer to other people by their true names. The recordings are confidential: only the study team members will listen to them and they will be destroyed after they have been transcribed. We will not collect any personal information that could easily identify you, and if anyone uses your true name or shares information that can identify you, it will be removed when the recordings are transcribed. If anyone does not want to be audio-recorded, we will take notes instead.

All research projects carry some risk that information about you may become known to people outside a study. However, we will do our best to protect your identity and comments made during the group discussion. Your name will not be attached to the personal information you give us or to any of the comments that you share during the group discussion. What you say will be summarized along with what others say. Comments made by others during the group discussion should not be discussed with people outside the group. However, we cannot guarantee that participants will keep things confidential.

Do you have any questions before we begin?"

Topics and Questions

- **Parents'/Guardians' understanding of the Peace in Schools program and what is taught in the Mindful Studies class**
    1) How would you describe the Peace in Schools program?
        a. What do you think it is trying to do?
        b. How does it do this?

    2) What is your child learning in the Mindful Studies class?
        a. How do you know this?

- **Parents'/Guardians' understanding of their child's interest in and previous/current involvement with mindfulness, and their child's reasons for participating in the Mindful Studies class**
    3) What other types of experiences has your child had with mindfulness techniques?

    4) How did your child become involved in, or choose to take, the Mindful Studies class?

- **Perceived impacts of the program on child individually and on the child's interpersonal interactions**
    5) Have you noticed any changes in your child that you believe have been influenced by the class – for example, in the way they think, feel, behave, or experience things?

    6) Have you noticed any changes in the way your child interacts with others that you believe have been influenced by the class?
        a. How would you describe these changes in how your child interacts with their friends, family and/or strangers, if any?
        b. How would you describe changes in interactions at school that you believe have been influenced by the class, if any?

- **Tools, ideas, or practices learned in the Mindful Studies class that the parent has talked to their child about or seen their child use**
    7) What specific tools, ideas, or practices has your child talked about having learned in the Mindful Studies class?
        a. Does your child use them? If so, how does your child use them?

- **Perceptions of the benefits and/or detriments of the Mindful Studies class**
- **Strengths and weaknesses of the Mindful Studies classes**
    8) What are your overall perceptions about the information and techniques your child is learning?
        a. What are the positives?
        b. What about the negatives?

    9) What would you say are the key strengths about this class? The key weaknesses?

    10) Who do you think should take this class? [Alternate: Who do you think this class would most benefit/be most helpful for?]
        a. What are the reasons why you think this?

- **Opinions on the class design and delivery, including the class environment, teachers, and frequency and duration**
    11) What do you know about the Mindful Studies class environment, including the physical space where the class is held and the agreements the class agrees to follow in their interactions (called "the environment of C.A.R.E.")? How would you describe it?
        a. How do you think the class environment makes your child feel, or shapes their class experience?
        b. Has your child talked about elements of the class environment that they like or dislike? What are the reasons for their likes/dislikes?

    12) What are your thoughts about:
        a. How the teachers are teaching the curriculum?
        b. How the teachers are interacting with students?
        c. The frequency of the class? (meaning "how often the class meets")
        d. The duration of the class? (meaning the class being offered for a full a semester)

- **Suggestions on improvements to strengthen Mindful Studies classes in the future**
    13) Do you have any recommendations for improving the Mindful Studies class?

Appendix D: Example Class Observation Checklist

JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH
Mindful Studies Class Observation Checklist – Class Observation 1a: Lesson 3

Study Title:	Adverse Childhood Events (ACEs), Mindfulness, and Adolescent Health: Assessing How the Peace in Schools Program Is Implemented and Affects Student Health in Portland Public High Schools
PI:	Dr. Kristin Mmari (Supervising Gia Naranjo-Rivera's dissertation study)
IRB No.:	IRB00008608
PI Version Number/Date:	Version 01, June 12, 2018

Observer Name: _____ Date: _____
Site (city, state): _____ School: _____
Instructor 1 Name: _____ ☐ PINS ☐ PPS ☐ Substitute
Instructor 2 Name: _____ ☐ PINS ☐ PPS ☐ Substitute
# of Students: _____
Time Class Started: _____ Time Class Ended: _____ Total Class Time: _____
If interrupted,
How much time was taken from the lesson? _____ minutes
Reason for interruption (e.g., fire alarm): _____
Did the lesson begin in a prior session? ☐ YES ☐ NO
If YES, draw a line above the first point made in THIS session.

Check "YES" or "NO" to indicate if the following contextual factors were present.

CONTEXTUAL FACTORS		
Instructors	**YES**	**NO**
Two instructors are always present (except in case of emergency).		
At least one instructor is a Peace in Schools (PINS) instructor fully trained in the Mindful Studies curriculum. If YES, are both teachers PINS instructors? _____		
At least one instructor is trained in / able to lead mindful movement (e.g., yoga) portion of the lesson.		
Space and Environment	**YES**	**NO**
Adequate physical space for the class; the space is not overcrowded. Describe (e.g., classroom, gym, etc.): _____		
Students sit in a circle on yoga mats and meditation cushions (vs. desks in rows).		
The environment is calm and inviting (e.g., warm lighting, calm, no loud/abrasive noises, etc.).		
Instructors review and/or maintain the Environment of C.A.R.E. (Note: This concept is not explicitly named/discussed until Lesson 5.)		
Materials	**YES**	**NO**
Adequate equipment for the class (e.g., cushions, mats, journals, etc.)		

Check "YES" or "NO" to indicate if each teaching approach or curriculum point below was covered when the session was taught. If this lesson began in a prior session, draw a line above the first curriculum point made in THIS session.

FIDELITY		
Teaching Approach	**YES**	**NO**
Instructors **modeled mindfulness** (e.g., reflective listening, nonjudgment, etc.).		
Instructors showed **flexibility** / molded the lesson to individual or group needs.		
Interacted with youth in a **non-authoritarian manner**, approaching youth as equals rather than using an authoritarian teacher-student power dynamic.		
Instructors explicitly used **equity-promoting/culturally-responsive** practices (e.g., ask preferred pronoun [he, she, they], discuss acceptance of differences, etc.).		
Instructors explicitly used **trauma-informed** practices (e.g., offering to keep eyes open during breathing exercises, taking time apart if you feel triggered, etc.).		
Instructors used a **strengths-based** approach with you (e.g., highlighting ways to draw upon strengths and build resilience vs. saying what not to do or avoid).		
Instructors **communicated well** between one another.		
Curriculum – Lesson 3: Accountability and Mindfulness Review	**YES**	**NO**
Time for change of clothes (4 minutes)		
Opening: mindful minute, announcements, check-in/lightening round		
Movement (10-20 minutes)		
Part 1: Sitting Meditation (3-5 minutes)		
Teacher prompts students to recall the previous day's breathing exercise ('Hind-Brain Breathing') and students share		
Teacher prompts students to find a comfortable seat, suggesting multiple options		
Teacher leads breathing exercise		
Teacher facilitates brief group discussion		
Part 2: Accountability Discussion (3-5 minutes)		
Teacher leads discussion on accountability and creating a community space		
Part 3: Mindfulness Discussion (5-8 minutes)		
Students define and discuss mindfulness and being present		
Teacher facilitates group discussion and reviews points from previous class		
Part 4: Take Three Steps (10-12 minutes)		
Teacher discusses using breath and senses to anchor attention in the present		
Teacher leads discussion of "mindful steps"		
Teacher leads Take 3 Steps activity		
Part 5: Group Discussion (4-5 minutes)		
Teacher outlines how group discussions work in the class • Raise your hand to share • Direct comments at facilitators rather than other students • Not talking and giving full attention while others are talking • Invitation for everyone to speak; step forward/step back • Snapping if you are feeling what someone is saying		
Teacher facilitates group discussion about the Take 3 Steps exercise		
Part 6: Take Three Steps (Less Instruction) (5-7 minutes)		

[Note: Doing a second round is optional and time dependent.)		
Teacher introduces second round of "Take Three Steps" with less instruction		
Teacher facilitates "Take 3 Steps" with less instruction		
Teacher reminds students they can use noticing senses, thoughts, emotions, and body sensations in their day to bring their attention back to the present moment		
Teacher facilitates brief group discussion		
Part 7: Intro to Compassionate Listening/Dyad Sharing (10-12 minutes)		
Teacher introduces compassionate communication, reflection, and witnessing		
Teacher pairs off students and students practice dyad sharing		
Teacher facilitates group discussion (6-8 minutes)		
Teacher encourages students to practice being a really good listener to someone in their life between this and the next class to see what happens		
Part 8: Closing (1-2 minutes)		
(Optional) Short sit; may choose to use the theme of the "Peaceful Warrior"		
Teacher thanks students for their attention and willingness that day		
Students adjust blankets/cushions and take a closing breath together		
Teacher thanks students for sharing their practice and ends class		
Time for change of clothes (4 minutes)		

REACH. Provide notes about *apparent* reach and diversity in the class, such as students of diverse sex, gender identities, sexual orientations, races/ethnicities, socioeconomic status, etc. For example: "12 girls and 7 boys, 2 self-identified F2M trans; one student mentioned the class helping him to face challenges talking about being gay with his father; 2 students had ESL assistants present; 3 Latino students sat together and were speaking Spanish; 1 student discussed having ADHD."

_____
_____
_____

Check "YES" or "NO" or "NA" (for Not Apparent) to indicate if each element of participant experience was observed.

PARTICIPANT EXPERIENCE			
Instructors	**YES**	**NO**	**NA**
All students participated in the mindful movement portion of the class.			
All students participated in the curriculum-based lesson.			
Students were engaged in / open to trying the lesson.			
Students discussed successfully applying what they are learning in class in life.			
Students mentioned challenges they have faced (or think they may face) when trying to apply what they are learning in Mindful Studies to their lives.			

Additional observation notes: _____
_____
_____
_____

Appendix E: Considerations for Measuring ACEs, Child Maltreatment, and Trauma

ACEs. ACEs are a widely-accepted approach to examine issues of child abuse, neglect, and maltreatment, with a well-established dose-response relationship to poor health and life outcomes.[801] However, ACEs-based approaches have their limitations (discussed below), and numerous alternative approaches exist.

There are at least four methods for measuring ACEs, which are typically collected in self-report surveys, but may be reported via a third-party such as a primary care provider or parent/caregiver. Common methods used to measure ACEs include:

1) *Cumulative ACEs score* provides a count of the number of unique ACEs experienced from a list of 10 (or some other number). This method equally weighs each ACE type and does not consider ACEs timing or intensity. The CDC-Kaiser ACEs Study is an example of this approach. Tools like the Philadelphia (PHL) ACE Survey ask about type and frequency of ACEs exposure in more detail, but also result in a cumulative score.[802] Though the data needed to compute an ACE score is less in-depth than other methods, this measurement approach consistently demonstrates a dose-response relationship with poor health and life outcomes. In fact, Wade et al. demonstrated that the 11-item BRFSS ACE measure could be reduced to a two-item screener (household alcohol and emotional abuse) to rapidly identify adults with ACEs, which is equally predictive of poor health outcomes.[803] Many scholars have called for inclusion of expanded ACEs at the organizational, community, and macro levels within the indigenous social-ecological model.[804,805,806,807,808 ,809]

2) *Unweighted ACEs categories.* An ACEs score and timing information is sometimes used to develop unweighted categories, such as chronic ACEs, early ACEs only, and limited ACEs.[810]

3) *Weighting of individual ACEs:* An ACEs score is derived by assigning a weight to each ACE a person experienced based on certain characteristics of that ACE to assess severity, such as recentness (how far in the past it occurred), age of occurrence, frequency of occurrence, how traumatic the person perceived the event to be, and/or how much they confided in others about the event at the time. ACEs are not weighted differently by type. The Childhood Traumatic Events Scale (CTES) is an example of this kind of approach.

While this approach requires more in-depth data collection, it may be particularly important give that the quantity, timing (i.e., past versus recent), duration (or repeated exposure), perceived severity, and type of ACEs exposure have been shown to impact the extent of negative health outcomes.[811,812] Quantity of exposures is important because certain adversities tend to occur in clusters.[813] Timing has also been found to be important in several studies. For example, a recent study by Poletti et al. has shown that both early and recent exposure to ACEs may affect the white matter microstructure of the brain, and that these changes may increase the severity and duration of psychosocial disorders like major depressive disorder.[814] Another study showed that women with a history of early trauma have a higher HPA-axis response in stressful situations.[815] Duration and type of adversity also matter. Friedman et al. found that timing of the event mattered, but not as much as repeated exposure to adversity, and that academic interruption and physical and sexual abuse led to the greatest health detriments.[816]

4) *Weighting of ACEs by type:* An ACEs score is derived by capturing the number and types of ACEs a person experienced, grouping them by category, and assigning a weight to each category. These categories proxy for a 'hierarchy of severity'. An increased cumulative number of individual ACEs and increased number of different types of ACEs also earns a higher ACEs score.

Limitations of ACEs measures include the total number, which ACEs the tools contain, if and how they are weighted, and the inclusion of ACEs outcomes that might also be proxies of risk or causal factors for ACEs. For example, physical neglect (e.g., if you didn't have enough to eat or wore dirty clothes) is commonly categorized as an ACE or outcome, when it can also arguably be considered a proxy for the causal variable of poverty or low-SES.

Non-ACEs approaches. There are other non-ACEs approaches to measuring the experiences and impacts of childhood trauma.

5) *Measuring trauma history, exposure, symptoms, and/or diagnoses:* Strand et al. reviewed 35 tools for measuring trauma history and exposure, and related symptoms, and grouped them into four categories:

    - history of trauma exposure *and* symptoms,
    - history of trauma exposure only,
    - PTSD and dissociative disorder symptoms,
    - multiple trauma symptoms.[817]

    Many of these have rigorous or promising psychometric properties that have been published, and many are free/minimal cost and readily accessible. However, there are few adolescent- and child-only measures, especially in the multiple/complex trauma symptom category.

6) *Parental Behaviors that May Constitute Maltreatment:* Another common approach to measuring child abuse, maltreatment or exposure to trauma is using the Conflict Tactics Scale (CTS). The CTS has been used nationally in the Longitudinal Studies on Child Abuse and Neglect (LONGSCAN) Study[818] and globally in UNICEF's Multiple Indicator Cluster Surveys (MICS3) Study[819] to assess the degree to which discipline by parents constitute abuse, neglect, or a child protection concern. This alternative approach, which does not directly ask about abuse and trauma, reveals that parents use many tactics to change their children's behaviors that are considered abusive.

Given that this study was designed for teens and is the first of its kind/in the field to examine whether the impacts of an MBI are moderated by ACEs level, a simple ACEs count was used, including both 10 traditional CDC-Kaiser ACEs and four expanded ACEs. Additionally, it was hypothesized that validity of responses on ACEs questions would be enhanced by asking students to only report the total number of ACEs they had been exposed to, rather than specific ones. For this reason, use of ACEs measures that required disclosure of frequency, duration, or severity were not used in this study. However, future studies might consider other means of measuring ACEs and maltreatment exposure.

Appendix F: Surveys

Pre-survey

JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH

Pre-Survey Questionnaire

Study Title:	Adverse Childhood Events (ACEs), Mindfulness, and Adolescent Health: Assessing How the Peace in Schools Program Is Implemented and Affects Student Health in Portland Public High Schools
PI:	Dr. Kristin Mmari (Supervising Gia Naranjo-Rivera's dissertation study)
IRB No.:	IRB00008608
PI Version Number/Date:	Version 03, July 18, 2018

"Hello. Thank you for agreeing to participate in this study about the Peace in Schools Program. As a part of this study, you are being asked to complete two surveys, one at the beginning and one at the end of the program. The surveys are used to measure changes that happen over time This survey includes 25 questions and should last about 30 minutes. The survey first asks characteristics about you (like grade and gender), so we can see if certain changes happen for certain groups more than others. It also includes questions to help us understand changes happening in your mind, emotions, interactions with others, and grades as you participate in the program.

You may choose not to answer any question that we ask, and you may stop participating in the survey at any time without any negative consequences. If you would like to stop, please let the researcher administering the survey know, and we will escort you back to the Mindful Studies class.

Do you have any questions before we begin?"

☐ **Beginning of the program** ☐ **End of the program**

Student ID: _____

PART 1. DEMOGRAPHICS and SCHOOL-RELATED QUESTIONS

Age [Youth Risk Behavior Survey (YRBS)]

1. **What is the month and year of your birth?**
    - *Month dropdown menu*
    - *Year dropdown menu*

Grade [Youth Risk Behavior Survey]

2. **What grade are you in?**
    a. 9th
    b. 10th
    c. 11th
    d. 12th
    e. Ungraded or other grade

[Source for questions 3-6: Weng, H.Y. (2018, June). Contemplative Neuroscience through the lens of diversity and social justice. Plenary faculty talk presented at the Mind and Life Summer Research Institute, Garrison, NY. Developed by Dr. Weng in conjunction with the East Bay Meditation Center.]

Sex and Gender [Dr. Weng, *citation above*]

3. **How do you self-identify your gender?**
    - **[OPEN BOX TO ENTER ANSWER]** or **Do not wish to identify**
    - **Follow-up question for scientific reporting:** *Some reviewers of this study may ask for the results to be presented with general categories, so we would like you to choose a broader category you may identify with. Recognizing that these categories may not fully represent your identity, with which general category do you most identify with?*
        a. Cisgender male (gender assigned male at birth and currently identify as male)
        b. Cisgender female (gender assigned female at birth and currently identify as female)
        c. Another identity such as transgender, intersex, and/or non-binary genders
        d. Do not wish to specify

Sexual orientation [Dr. Weng, *citation above*]

4. **How do you self-identify your sexual orientation?**
    - **[OPEN BOX TO ENTER ANSWER]** or **Do not wish to identify**
    - **Follow-up question for scientific reporting:**
        a. Straight or Heterosexual
        b. Gay
        c. Lesbian
        d. Bisexual
        e. Queer or questioning
        f. Pansexual

g. Asexual
h. Unsure
i. Do not wish to specify

Definitions (*appear in bubble when you click on each item*):

- Straight or Heterosexual – A boy attracted to girls only, or a girl attracted to boys only
- Gay/Homosexual – A boy attracted to boys only, but not to girls
- Lesbian/Homosexual – A girl who is attracted to girls, but not to boys
- Bisexual – A boy who is attracted both boys and girls, or a girl who is attracted to both girls and boys
- Queer or questioning – A person who has a more fluid understanding of gender and sexual orientation beyond traditional categories, and who may be questioning their sexual orientation or exploring what types of people they are attracted to
- Pansexual – Not limited in sexual choice with regard to biological sex, gender, or gender identity
- Asexual – Non-sexual; a person without sexual feelings, attractions, or associations
- Unsure

Race [Dr. Weng, *citation above,* and US Census, YRBS]

5. **For the purposes of scientific reporting, with which race or races do you identify?** (Please select all that apply.)
   a. American Indian
   b. Alaska Native
   c. Asian
   d. Black or African American
   e. Native Hawaiian or Other Pacific Islander
   f. White
   g. Multiple races/ethnicities (2 or more categories a-f)
   h. Do not wish to specify

Definitions (*appear in bubble when you click on each item*):

- American Indian or Alaska Native – A person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment.
- Asian – A person having origins in any of the original people in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.
- Black or African American – A person having origins in any of the black racial groups of Africa.
- Native Hawaiian or Other Pacific Islander – A person having origins of any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.
- White or Caucasian – A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.
- Multiracial – A person identifying as one or more of the racial categories.

Ethnicity [Dr. Weng, *citation above,* and US Census, YRBS]

6. **With which ethnic identify or identities do you identify?** *Ethnicity refers to people who identify with each other based on similarities such as common ancestral, language, social, cultural, or national experiences. These can include shared cultural heritage, ancestry, origin myth, history, homeland, language or dialect, symbolic systems such as religion, mythology and ritual, cuisine, dressing style, art, and physical appearance.*
    - **Do you identify as multiethnic (of more than one ethnicity and/or heritage)?**
        a. No
        b. Yes
        c. Do not wish to specify
    - **For purposes of scientific reporting, do you identify has Hispanic, Latino/Latina/Latinx, or of Spanish origin?** (*This includes any person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish cultural origin, regardless of race.*)
        a. No
        b. Yes
        c. Do not wish to specify

      Definition (*appears in bubble when you click on the term "Latinx"*):

        - Latinx – The gender-neutral term for gender-binary descriptions of Latino/a.

Nativity [CDC-Kaiser ACEs Questionnaire]

7. **Were you born outside the U.S.?**
    a. No
    b. Yes
    c. Do not wish to specify

Socioeconomic status

8. **Do you qualify for free or reduced-price school lunch?**
    a. No
    b. Yes
    c. Do not wish to specify

Socioeconomic status [Behavioral Risk Factor Surveillance System (BRFSS)]

9. **What is the highest grade either of your parents completed?**
    a. Never attended school or only attended kindergarten
    b. Grades 1 through 8 (Elementary)
    c. Grades 9 through 11 (Some high school)
    d. Grade 12 or GED (High school graduate)
    e. College 1 year to 3 years (Some college or technical school)
    f. College 4 years or more (College graduate)
    g. Don't know

Academic Performance [Modified from YRBS; *to be cross-referenced with school transcripts*]

10. **During the past semester, how would you describe your grades in school?**
    a. Mostly A's

b. Mostly B's
c. Mostly C's
d. Mostly D's
e. Mostly F's
f. None of these grades
g. Not sure

Class dose [Created by student researcher]

11. Including this semester, how many semesters have you taken the Mindful Studies class?

a. One
b. Two
c. Three
d. Four
e. Five
f. Six or more

PART 2. READINESS FOR CHANGE

Readiness for Change [URICA: University of Rhode Island Change Assessment Scale – DELTA Version]

12. Each statement below describes how a person might feel when approaching problems or challenges in their lives that mindfulness (or other strategies) might help them to change or improve. To answer this question, please think about an important problem or challenge in your life that you think the Mindful Studies class might be able to help you with (e.g., anxiety, stress, anger, difficulty getting along with parents, low motivation, poor concentration, problems with friends, etc.). When you see a blank ("_____"), fill it in with your problem or challenge.

    Indicate the extent to which you tend to agree or disagree with each statement right now, not what you have felt in the past or what you would like to feel.

    1 = Strongly Disagree 2 = Disagree 3 = Undecided 4 = Agree 5 = Strongly Agree

	Strongly Disagree				**Strongly Agree**
a. It doesn't make much sense for me to consider changing my _____.	1	2	3	4	5
b. I've been thinking that I might want to change something about my _____.	1	2	3	4	5
c. At times my _____ causes problems and I'm determined to change.	1	2	3	4	5
d. It is frustrating, but I feel I might be having a recurrence of my _____ that I thought I had resolved.	1	2	3	4	5

e.	Trying to change my _____ is pretty much a waste of time for me.	1	2	3	4	5
f.	I guess I have faults, but there's nothing that I really need to change about my _____.	1	2	3	4	5
g.	I thought once I had resolved my _____ I would be free of it, but sometimes I still find myself struggling with it.	1	2	3	4	5
h.	I may have a problem with my _____ and I think I should work on it.	1	2	3	4	5
i.	I am really working hard to change my _____.	1	2	3	4	5
j.	I hope that someone in the class will have some good advice for me about my _____.	1	2	3	4	5
k.	Anyone can talk about changing their problems; I'm actually going to do something about it.	1	2	3	4	5
l.	After all I have done to try and change my _____, every now and then it comes back to haunt me.	1	2	3	4	5

PART 3. NEUROCOGNITIVE OUTCOMES

Attention [ACTeRS: ADD-H Comprehensive Teacher's Rating Scale – Self-report Questionnaire]

13. Below are descriptions of behavior. Please read each item carefully and choose the letter (A – E) that best describes your behavior.

Please use this key to select your answers:
A = Strongly Disagree B = Disagree C = Uncertain D = Agree E = Strongly Agree

		Strongly Disagree				**Strongly Agree**
a.	I do things impulsively.	A	B	C	D	E
b.	People say I'm a loner.	A	B	C	D	E
c.	I often get myself in trouble for saying things without stopping to think.	A	B	C	D	E
d.	I am easily distracted.	A	B	C	D	E
e.	I find it difficult to sit still.	A	B	C	D	E
f.	I enjoy working out complex problems.	A	B	C	D	E
g.	People say I'm tactful.	A	B	C	D	E
h.	I don't make friends easily.	A	B	C	D	E
i.	I think carefully before I do or say things.	A	B	C	D	E
j.	I often start something and then lose interest before it's completed.	A	B	C	D	E
k.	I get restless while listening to a long speech or lecture.	A	B	C	D	E
l.	Complex problems with a lot of detail bore me.	A	B	C	D	E

m. I enjoy parties.	A	B	C	D	E
n. I act spontaneously.	A	B	C	D	E
o. I prefer to think things over before making up my mind.	A	B	C	D	E
p. I seldom make careful plans.	A	B	C	D	E
q. I have more friends than most people.	A	B	C	D	E
r. I usually say the first thing that comes to mind.	A	B	C	D	E
s. It's hard for me to keep my mind on just one task.	A	B	C	D	E
t. I fidget a lot.	A	B	C	D	E
u. I enjoy the challenge of working out a complicated problem.	A	B	C	D	E
v. Most people like me.	A	B	C	D	E
w. I often do things on the spur of the moment.	A	B	C	D	E
x. I like to take plenty of time before I make a decision.	A	B	C	D	E
y. As a child I had many playmates.	A	B	C	D	E
z. My mind tends to wander when I am working on something.	A	B	C	D	E
aa. I can sit in one place quietly for a long time.	A	B	C	D	E
bb. I enjoy doing detailed work.	A	B	C	D	E
cc. I'm more self-confident than most people.	A	B	C	D	E
dd. I'm usually sensitive to other people's feelings.	A	B	C	D	E
ee. I often do things without stopping to think first.	A	B	C	D	E
ff. I complete what I start.	A	B	C	D	E
gg. I start to squirm if I have to sit in one place for long.	A	B	C	D	E
hh. I try to avoid problems with a lot of detail.	A	B	C	D	E
ii. There are very few people I can't get along with.	A	B	C	D	E

Behavior Regulation & Metacognition/Executive Function [BRIEF-SR: Behavior Rating Inventory of Executive Function, Self-Report Version]

14. The following is a list of statements that describe young people. We would like to know if you have had problems with these behaviors over the past 6 months. Please answer all the items the best that you can. Please DO NOT SKIP ANY ITEMS. Think about yourself as you read each statement and choose:

    N if the behavior is **Never** a problem
    S if the behavior is **Sometimes** a problem
    O if the behavior is **Often** a problem

    For example, if you **never** have trouble completing homework on time, you would choose **N.**

	Never Sometimes Often
a. I have trouble sitting still	N S O
b. I have trouble accepting a different way to solve a problem with sings such as schoolwork, friends, or tasks	N S O

c. When I am given three things to do, I remember only the first or last	N O S
d. I am not aware of how my behavior affects or bothers others	N O S
e. My work is sloppy	N O S
f. I have angry outbursts	N O S
g. I don't plan ahead for school assignments	N O S
h. I have difficulty finding my things (such as clothes, glasses, shoes, books, or pencils)	N O S
i. I have problems getting started on my own	N O S
j. I am impulsive (I don't think before doing)	N O S
k. I have trouble getting used to new situations (such as classes, groups, or friends)	N O S
l. I have a short attention span	N O S
m. I have a poor understanding of my own strengths and weaknesses (I try things that are too difficult or too easy for me)	N O S
n. I have outbursts for little reason	N O S
o. I get caught up in details and miss the main idea	N O S
p. I get out of control more than my friends	N O S
q. I get stuck on one topic or activity	N O S
r. I forget my name	N O S
s. I have trouble with jobs or tasks that have more than one step	N O S
t. I don't know when my actions bother others	N O S
u. I have problems organizing my written work	N O S
v. I get upset over small events	N O S
w. I have good ideas but do not get the job done (I lack follow-through)	N O S
x. I talk at the wrong time	N O S
y. I have trouble finishing tasks (such as chores or homework)	N O S
z. I don't notice when my behavior causes negative reactions until it is too late	N O S

aa. I overreact	N S O
bb. I have trouble remembering things, even for a few minutes (such as directions or phone numbers)	N S O
cc. I make careless errors	N S O
dd. I have problems waiting my turn	N S O
ee. It bothers me when I have to deal with changes (such as routines, foods, or places)	N S O
ff. I forget to hand in my homework, when it's completed	N S O
gg. I am slower than others when completing my work	N S O
hh. I am easily overwhelmed	N S O
ii. I don't plan ahead for future activities	N S O
jj. I have trouble counting to three	N S O
kk. I don't think ahead about possible problems	N S O
ll. I have difficulty finishing a task on my own	N S O
mm. I interrupt others	N S O
nn. I try the same approach to a problem over and over when it does not work (I get stuck)	N S O
oo. I forget instructions easily	N S O
pp. It takes me longer to complete my work	N S O
qq. My eyes fill with tears quickly over little things	N S O
rr. I have problems completing my work	N S O
ss. I have trouble thinking of a different way to solve a problem when I get stuck	N S O
tt. I am absentminded (forgetful)	N S O
uu. I have trouble prioritizing (ordering) my activities	N S O
vv. I think or talk out loud when working	N S O
ww. I don't think of consequences before acting	N S O
xx. I am unaware of my behavior when I am in a group	N S O
yy. I have trouble changing from one activity to another	N S O

zz.	I have trouble carrying out the things that are needed to reach a goal (such as saving money for special items or studying to get good grades)	N O S
aaa.	I have difficulty coming up with different ways of solving a problem	N O S
bbb.	I cannot find the front door of my home	N O S
ccc.	I have problems finishing long-term projects (such as papers or book reports)	N O S

PART 4. PSYCHOLOGICAL OUTCOMES

Compassion for Self [Self-Compassion Scale Short Form)

15. How I typically act towards myself in difficult times. Please read each statement carefully before answering. To the left of each item, indicate how often you behave in the stated manner.

    1 = Almost Never and 5 = Almost Always

	Almost Never				**Almost Always**
a. When I fail at something important to me, I become consumed by feelings of inadequacy.	1	2	3	4	5
b. I try to be understanding and patient towards those aspects of my personality I don't like.	1	2	3	4	5
c. When something painful happens, I try to take a balanced view of the situation.	1	2	3	4	5
d. When I'm feeling down, I tend to feel like most other people are probably happier than I am.	1	2	3	4	5
e. I try to see my failings as part of the human condition (or of being human).	1	2	3	4	5
f. When I'm going through a very hard time, I give myself the caring and tenderness I need.	1	2	3	4	5
g. When something upsets me, I try to keep my emotions in balance.	1	2	3	4	5
h. When I fail at something that's important to me, I tend to feel alone in my failure.	1	2	3	4	5
i. When I'm feeling down, I tend to obsess and fixate on everything that's wrong.	1	2	3	4	5
j. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.	1	2	3	4	5
k. I'm disapproving and judgmental about my own flaws and inadequacies.	1	2	3	4	5
l. I'm intolerant and impatient towards those aspects of my personality I don't like.	1	2	3	4	5

Perceived Stress [Perceived Stress Scale (PSS)]

16. This question asks you about your feelings and thoughts <u>during the last month</u>. Please indicate *how often* you felt or thought a certain way.

0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

	Never Very Often				
a. In the last month, how often have you been upset because of something that happened unexpectedly?	0	1	2	3	4
b. In the last month, how often have you felt that you were unable to control the important things in your life?	0	1	2	3	4
c. In the last month, how often have you felt nervous and "stressed"?	0	1	2	3	4
d. In the last month, how often have you felt confident about your ability to handle your personal problems?	0	1	2	3	4
e. In the last month, how often have you felt that things were going your way?	0	1	2	3	4
f. In the last month, how often have you found that you could not cope with all the things that you had to do?	0	1	2	3	4
g. In the last month, how often have you been able to control irritations in your life?	0	1	2	3	4
h. In the last month, how often have you felt that you were on top of things?	0	1	2	3	4
i. In the last month, how often have you been angered because of things that were outside of your control?	0	1	2	3	4
j. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	0	1	2	3	4

Coping [Brief COPE]

17. This question deals with ways you've been coping with the stress in your life. Please indicate *to what extent* you felt or thought a certain way. Don't answer on the basis of whether it seems to be working or not—just whether or not you're doing it. Try to rate each item separately in your mind from the others. Make your answers as true FOR YOU as you can.

1 = Not at all 2 = A little bit 3 = A medium amount 4 = A lot

	Not at all			**A lot**
a. I've been turning to my schoolwork or other activities to take my mind off things.	1	2	3	4
b. I've been concentrating my efforts on doing something about the situation I'm in.	1	2	3	4
c. I've been saying to myself "this isn't real."	1	2	3	4

d. I've been using alcohol or other drugs to make myself feel better.	1	2	3	4
e. I've been getting emotional support from others.	1	2	3	4
f. I've been giving up trying to deal with it.	1	2	3	4
g. I've been taking action to try to make the situation better.	1	2	3	4
h. I've been refusing to believe that it has happened.	1	2	3	4
i. I've been saying things to let my unpleasant feelings escape.	1	2	3	4
j. I've been getting help and advice from other people.	1	2	3	4
k. I've been using alcohol or drugs to help me get through it.	1	2	3	4
l. I've been trying to see it in a different light, to make it seem more positive.	1	2	3	4
m. I've been criticizing myself.	1	2	3	4
n. I've been trying to come up with a strategy about what to do.	1	2	3	4
o. I've been getting comfort and understanding from someone.	1	2	3	4
p. I've been giving up the attempt to cope.	1	2	3	4
q. I've been looking for something good in what is happening.	1	2	3	4
r. I've been making jokes about it.	1	2	3	4
s. I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.	1	2	3	4
t. I've been accepting the reality of the fact that it has happened.	1	2	3	4
u. I've been expressing my negative feelings.	1	2	3	4
v. I've been trying to find comfort in my religion or spiritual beliefs.	1	2	3	4
w. I've been trying to get advice or help from other people about what to do.	1	2	3	4
x. I've been learning to live with it.	1	2	3	4
y. I've been thinking hard about what steps to take.	1	2	3	4
z. I've been blaming myself for things that happened.	1	2	3	4
aa. I've been praying or meditating.	1	2	3	4
bb. I've been making fun of the situation.	1	2	3	4

Emotion Regulation [Emotion Regulation Questionnaire (ERQ)]

18. We would like to ask you some questions about your emotional life, in particular, how you control (that is, regulate and manage) your emotions. The questions below involve two distinct aspects of your emotional life. One is your emotional experience, or what you feel like inside. The other is your emotional expression, or how you show your emotions in the way you talk, gesture, or behave. Although some of the following questions may seem similar to one another, they differ in important ways. For each item, please answer using the following scale:

1 = Strongly Disagree 4 = Neutral 7 = Strongly Agree

	Strongly Disagree			Neutral			Strongly Agree
a. When I want to feel more *positive* emotion (such as joy or amusement), I *change what I'm thinking about.*	1	2	3	4	5	6	7
b. I keep my emotions to myself.	1	2	3	4	5	6	7
c. When I want to feel less *negative* emotion (such as sadness or anger), I *change what I'm thinking about.*	1	2	3	4	5	6	7
d. When I am feeling positive emotions, I am careful not to express them.	1	2	3	4	5	6	7
e. When I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm.	1	2	3	4	5	6	7
f. I control my emotions by not expressing them.	1	2	3	4	5	6	7
g. When I want to feel more *positive* emotion, I *change the way I'm thinking* about the situation.	1	2	3	4	5	6	7
h. I control my emotions by *changing the way I think* about the situation I'm in.	1	2	3	4	5	6	7
i. When I am feeling *negative* emotions, I make sure not to express them.	1	2	3	4	5	6	7
j. When I want to feel less *negative* emotion, I *change the way I'm thinking* about the situation.	1	2	3	4	5	6	7

Generalized Anxiety Disorder 7-item (GAD-7) Scale

19. Over the last 2 weeks, how often have you been bothered by the following problems?

0 = Not at all sure 1 = Several days 2 = Over half the days 3 = Nearly every day

	Never			Often
a. Feeling nervous, anxious, or on edge	0	1	2	3
b. Not being able to stop or control worrying	0	1	2	3
c. Worrying too much about different things	0	1	2	3
d. Trouble relaxing	0	1	2	3
e. Being so restless that it's hard to sit still	0	1	2	3
f. Becoming easily annoyed or irritable	0	1	2	3
g. Feeling afraid as if something awful might happen	0	1	2	3

Global Early Adolescence Study (GEAS) Depression Scale

20. During adolescence we know that people your age often experience emotional ups and downs. That is normal. Here we would like to better understand if you experience emotional lows a lot.

We would like to know a little about how you are feeling. Please tell me how much you agree with the following statements:

	Disagree a lot	Disagree a little	Agree a little	Agree a lot
a. I felt miserable or unhappy.	0	1	2	3
b. I blame myself when things go wrong.	0	1	2	3
c. I worry for no good reason.	0	1	2	3
d. I am so unhappy I can't sleep at night.	0	1	2	3
e. I feel sad.	0	1	2	3
f. I am so unhappy I think of harming myself.	0	1	2	3

PART 5. SOCIAL OUTCOMES

Social Competence [Social Competence Scale for Teenagers]

21. For the questions below, the answer choices for questions a, b, and c are:
1 = Not at all like me | 2 = A little like me | 3 = Somewhat like me | 4 = A lot like me | 5 = Exactly like me

	Not at all like me				Exactly like me
Please indicate how much statements a, b, and c describe you.					
a. I avoid making other kids look bad.	1	2	3	4	5
b. If two of my friends are fighting, I find a way to work things out.	1	2	3	4	5
c. When I work in school groups, I do my fair share.	1	2	3	4	5

The answer choices for questions d to i are:
1 = None of the time | 2 = A little of the time | 3 = Some of the time | 4 = Most of the time | 5 = All of the time

	None of the time				All of the time
Please indicate how often the things in questions d-I happen. How often…					
d. Do you get along well with people of different races, cultures and religions?	1	2	3	4	5
e. Do you listen to other students' ideas?	1	2	3	4	5
f. Do you control your anger when you have a disagreement with a friend?	1	2	3	4	5
g. Can you discuss a problem with a friend without making things worse?	1	2	3	4	5
h. Do you follow the rules at a park, theater, or sports event?	1	2	3	4	5

i. Do you respect other points of view, even if you disagree?	1	2	3	4	5

Connectedness [The Social Connectedness Scale – Revised]

22. Circle the answer that shows how much you agree or disagree with each of the following statements.

1 = Strongly Agree 6 = Strongly Disagree

	Strongly Agree					**Strongly Disagree**
a. I feel disconnected from the world around me.	1	2	3	4	5	6
b. Even around people I know, I don't feel that I really belong.	1	2	3	4	5	6
c. I feel so distant from people.	1	2	3	4	5	6
d. I have no sense of togetherness with my peers.	1	2	3	4	5	6
e. I don't feel related to anyone.	1	2	3	4	5	6
f. I catch myself losing all sense of connectedness with society.	1	2	3	4	5	6
g. Even among my friends, there is no sense of brother/sisterhood.	1	2	3	4	5	6
h. I don't feel that I participate with anyone or any group.	1	2	3	4	5	6

Compassion for Others [Compassion for Others Scale]

23. How I typically act towards myself in difficult times. Please read each statement carefully before answering. To the left of each item, indicate how often you behave in the stated manner.

1 = Almost Never and 5 = Almost Always

	Almost Never				**Almost Always**
a. When people cry in front of me, I often don't feel anything at all.	1	2	3	4	5
b. Sometimes when people talk about their problems, I feel like I don't care.	1	2	3	4	5
c. I don't feel emotionally connected to people in pain.	1	2	3	4	5
d. I pay careful attention when other people talk to me.	1	2	3	4	5
e. I feel detached from others when they tell me their tales of woe (or stories that about their challenges).	1	2	3	4	5
f. If I see someone going through a difficult time, I try to be caring toward that person.	1	2	3	4	5
g. I often tune out when people tell me about their troubles.	1	2	3	4	5
h. I like to be there for others in times of difficulty.	1	2	3	4	5

i. I notice when people are upset, even if they don't say anything.	1	2	3	4	5
j. When I see someone feeling down, I feel like I can't relate to them.	1	2	3	4	5
k. Everyone feels down sometimes, it is part of being human.	1	2	3	4	5
l. Sometimes I am cold to others when they are down and out.	1	2	3	4	5
m. I tend to listen patiently when people tell me their problems.	1	2	3	4	5
n. I don't concern myself with other people's problems.	1	2	3	4	5
o. It's important to recognize that all people have weaknesses and no one's perfect.	1	2	3	4	5
p. My heart goes out to people who are unhappy.	1	2	3	4	5
q. Despite my differences with others, I know that everyone feels pain just like me.	1	2	3	4	5
r. When others are feeling troubled, I usually let someone else attend to them.	1	2	3	4	5
s. I don't think much about the concerns of others.	1	2	3	4	5
t. Suffering is just a part of the common human experience.	1	2	3	4	5
u. When people tell me about their problems, I try to keep a balanced perspective on the situation.	1	2	3	4	5
v. I can't really connect with other people when they're suffering.	1	2	3	4	5
w. I try to avoid people who are experiencing a lot of pain.	1	2	3	4	5
x. When others feel sadness, I try to comfort them.	1	2	3	4	5

Global Early Adolescence Study (GEAS)

24. Is there anything you are going through or dealing with that you would like to discuss with someone?
    a. Yes
    b. No

Post-survey

JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH

Post Survey Questionnaire

Study Title: Adverse Childhood Events (ACEs), Mindfulness, and Adolescent Health: Assessing How the Peace in Schools Program Is Implemented and Affects Student Health in Portland Public High Schools

PI:	Dr. Kristin Mmari (Supervising Gia Naranjo-Rivera's dissertation study)
IRB No.:	IRB00008608
PI Version Number/Date:	Version 02, July 18, 2018

"Hello. Thank you for agreeing to participate in this study about the Peace in Schools Program. As a part of this study, you are being asked to complete two surveys, one at the beginning and one at the end of the program. The surveys are used to measure changes that happen over time This survey includes 25 questions and should last about 30 minutes. The survey first asks characteristics about you (like grade and gender), so we can see if certain changes happen for certain groups more than others. It also includes questions to help us understand changes happening in your mind, emotions, interactions with others, and grades as you participate in the program.

You may choose not to answer any question that we ask, and you may stop participating in the survey at any time without any negative consequences. If you would like to stop, please let the researcher administering the survey know, and we will escort you back to the Mindful Studies class.

Do you have any questions before we begin?"

☐ **Beginning of the program** ☐ **End of the program**

Student ID: _____

PART 1. DEMOGRAPHICS and SCHOOL-RELATED QUESTIONS

Academic Performance [Modified from YRBS; *to be cross-referenced with school transcripts*]

25. During the past semester, how would you describe your grades in school?

a. Mostly A's
b. Mostly B's
c. Mostly C's
d. Mostly D's
e. Mostly F's
f. None of these grades
g. Not sure

PART 2. CHALLENGING CHILDHOOD EXPERIENCES and READINESS FOR CHANGE

Now we would like to ask you about challenges you may have experienced anytime between birth through age 17. Some of these questions might bring up challenging thoughts or feelings. Remember that you can take time to answer the questions, skip any question, or choose to stop taking this survey at any time.

Why are we asking these questions? We are asking questions about how many types of challenging childhood experiences you have faced to see if participating in the Mindful Studies class has different impacts on students based on the level/number of hardships they have faced.

ACEs [Modified from CDC-Kaiser ACEs Questionnaire Male/Female]

26. A) Ten types of childhood experiences are listed below. Please count the number of unique types of experiences you ever experienced before age 18 from the list below:

Type 1: Emotional Abuse

- Did a parent or other adult in the household **often or very often…**

  Swear at you, insult you, put your down, or humiliate you?

  or

  Act in a way that made you feel afraid that you might be physically hurt?

Type 2: Physical Abuse

- Did a parent or other adult in the household **often or very often…**

  Push, grab, shove, slap, or throw something at you?

  or

  Ever hit you so hard that you had marked or were injured?

  or

  Ever kick you, bite you, hit you with a fist, or hit you with something hard?

Type 3: Sexual Abuse

- Did an adult or person at least 5 years older than you **ever…**

  Touch or fondle you or have you touch their body in a sexual way?

  or

  Attempt to have or actually have oral, anal, or vaginal intercourse with you?

Type 4: Emotional Neglect

- Did you **often or very often** feel that...

  No one in your family loved you or thought you were important or special?

Type 5: Physical Neglect

- Did you **often or very often** feel that...

  You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you?

  or

  Your parents did not take you to the doctor if you needed it?

Type 6: Witnessing domestic violence against mother/female caretaker

- Was your mother or stepmother:

  Often or very often pushed, grabbed, slapped, or had something thrown at her?

  or

  Sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard?

  or

  Ever threatened to hurt her or actually hurt her with a weapon?

Type 7: Household substance use

- Did you **ever**…

  Live with anyone who was a problem drinker or alcoholic, or who used street drugs?

  or

  Were your parent(s) or primary caregiver(s) too drunk or high to take care of the family?

Type 8: Household mental illness

- Was someone in your household depressed or mentally ill?

Type 9: Parental separation/divorce

- Was a biological parent **ever** lost to you through divorce, abandonment, or other reason?

Type 10: Household incarceration

- Did someone in your household committed a serious crime or go to prison?

How many of the types of experiences above did you experience at least once before age 18? Each time you could answer "yes" to one of the questions (or related groups of questions), that is considered one type of event. For example, if you experienced emotional abuse (someone verbally insulted you) at least once, witnessed domestic violence toward your mother at least once, and your parents got separated at least once, you would choose option c – "Three" because you experienced three different types of events from the list. Even if you witnessed domestic violence many times, you count this as one because it is one unique type of experience.

a. Zero
b. One
c. Two
d. Three
e. Four
f. Five
g. Six
h. Seven

i. Eight
j. Nine
k. Ten
l. Choose not to answer

Expanded ACEs [Created by student researcher based on the literature on bullying[820,821,822], social isolation[823,824], neighborhood insecurity[825,826,827,828], and discrimination[829,830]]

B) Four more types of childhood experiences are listed below. Please count the number of unique <u>types</u> of experiences you ever experienced before age 18 from the list below:

Type 1: Bullying

- Did other kids, including your brothers or sisters, **often or very often** hit you, threaten you, pick on you or insult you? This can include bullying in-person or on the internet or social media (known as "cyber-bullying").

Type 2: Social Isolation

- Did you **often or very often** feel lonely, rejected, or that nobody liked you?

Type 3: Neighborhood Insecurity

- Did you live **for 2 or more years** in a neighborhood that was dangerous, or where you saw people being assaulted?

Type 4: Discrimination

- Did you ever experience discrimination because of your race, class (for example, being from a poor family), sexual orientation (for example, being gay or lesbian), or other group characteristic?

How many of the types of the four experiences above did you experience at least once before age 18? Each time you could answer "yes" to one of the questions, that is considered one type of experience. For example, if you were bullied many times, felt lonely/rejected more than once, and lived in a dangerous neighborhood, you would choose "3" because you experienced three different type of experiences from the list. If you were bullied many times, you would count this as one because it is one unique type of experience.

a. Zero
b. One
c. Two
d. Three
e. Four

Readiness for Change [URICA: University of Rhode Island Change Assessment Scale – DELTA Version]

27. Each statement below describes how a person might feel when approaching problems or challenges in their lives that mindfulness (or other strategies) might help them to change or improve. To answer this question, please think about an important problem or challenge in your life that you think the Mindful Studies class might be able to help you with (e.g., anxiety, stress,

anger, difficulty getting along with parents, low motivation, poor concentration, problems with friends, etc.). When you see a blank ("_____"), fill it in with your problem or challenge.

Indicate the extent to which you tend to agree or disagree with each statement right now, not what you have felt in the past or what you would like to feel.

1 = Strongly Disagree 2 = Disagree 3 = Undecided 4 = Agree 5 = Strongly Agree

	Strongly Disagree				Strongly Agree
m. It doesn't make much sense for me to consider changing my _____.	1	2	3	4	5
n. I've been thinking that I might want to change something about my _____.	1	2	3	4	5
o. At times my _____ causes problems and I'm determined to change.	1	2	3	4	5
p. It is frustrating, but I feel I might be having a recurrence of my _____ that I thought I had resolved.	1	2	3	4	5
q. Trying to change my _____ is pretty much a waste of time for me.	1	2	3	4	5
r. I guess I have faults, but there's nothing that I really need to change about my _____.	1	2	3	4	5
s. I thought once I had resolved my _____ I would be free of it, but sometimes I still find myself struggling with it.	1	2	3	4	5
t. I may have a problem with my _____ and I think I should work on it.	1	2	3	4	5
u. I am really working hard to change my _____.	1	2	3	4	5
v. I hope that someone in the class will have some good advice for me about my _____.	1	2	3	4	5
w. Anyone can talk about changing their problems; I'm actually going to do something about it.	1	2	3	4	5
x. After all I have done to try and change my _____, every now and then it comes back to haunt me.	1	2	3	4	5

PART 3. NEUROCOGNITIVE OUTCOMES

Attention [ACTeRS: ADD-H Comprehensive Teacher's Rating Scale – Self-report Questionnaire]

28. Below are descriptions of behavior. Please read each item carefully and choose the letter (A – E) that best describes your behavior.

Please use this key to select your answers:

A = Strongly Disagree B = Disagree C = Uncertain D = Agree E = Strongly Agree

	Strongly Disagree				**Strongly Agree**
jj. I do things impulsively.	A	B	C	D	E
kk. People say I'm a loner.	A	B	C	D	E
ll. I often get myself in trouble for saying things without stopping to think.	A	B	C	D	E
mm. I am easily distracted.	A	B	C	D	E
nn. I find it difficult to sit still.	A	B	C	D	E
oo. I enjoy working out complex problems.	A	B	C	D	E
pp. People say I'm tactful.	A	B	C	D	E
qq. I don't make friends easily.	A	B	C	D	E
rr. I think carefully before I do or say things.	A	B	C	D	E
ss. I often start something and then lose interest before it's completed.	A	B	C	D	E
tt. I get restless while listening to a long speech or lecture.	A	B	C	D	E
uu. Complex problems with a lot of detail bore me.	A	B	C	D	E
vv. I enjoy parties.	A	B	C	D	E
ww. I act spontaneously.	A	B	C	D	E
xx. I prefer to think things over before making up my mind.	A	B	C	D	E
yy. I seldom make careful plans.	A	B	C	D	E
zz. I have more friends than most people.	A	B	C	D	E
aaa. I usually say the first thing that comes to mind.	A	B	C	D	E
bbb. It's hard for me to keep my mind on just one task.	A	B	C	D	E
ccc. I fidget a lot.	A	B	C	D	E
ddd. I enjoy the challenge of working out a complicated problem.	A	B	C	D	E
eee. Most people like me.	A	B	C	D	E
fff. I often do things on the spur of the moment.	A	B	C	D	E
ggg. I like to take plenty of time before I make a decision.	A	B	C	D	E
hhh. As a child I had many playmates.	A	B	C	D	E
iii. My mind tends to wander when I am working on something.	A	B	C	D	E
jjj. I can sit in one place quietly for a long time.	A	B	C	D	E
kkk. I enjoy doing detailed work.	A	B	C	D	E
lll. I'm more self-confident than most people.	A	B	C	D	E
mmm. I'm usually sensitive to other people's feelings.	A	B	C	D	E
nnn. I often do things without stopping to think first.	A	B	C	D	E
ooo. I complete what I start.	A	B	C	D	E
ppp. I start to squirm if I have to sit in one place for long.	A	B	C	D	E
qqq. I try to avoid problems with a lot of detail.	A	B	C	D	E
rrr. There are very few people I can't get along with.	A	B	C	D	E

Behavior Regulation & Metacognition/Executive Function [BRIEF-SR: Behavior Rating Inventory of Executive Function, Self-Report Version]

29. The following is a list of statements that describe young people. We would like to know if you have had problems with these behaviors over the past 6 months. Please answer all the items the best that you can. Please DO NOT SKIP ANY ITEMS. Think about yourself as you read each statement and choose:

    N if the behavior is **Never** a problem
    S if the behavior is **Sometimes** a problem
    O if the behavior is **Often** a problem

    For example, if you **never** have trouble completing homework on time, you would choose **N.**

	Never Sometimes Often
a. I have trouble sitting still	N S O
b. I have trouble accepting a different way to solve a problem with sings such as schoolwork, friends, or tasks	N S O
c. When I am given three things to do, I remember only the first or last	N S O
d. I am not aware of how my behavior affects or bothers others	N S O
e. My work is sloppy	N S O
f. I have angry outbursts	N S O
g. I don't plan ahead for school assignments	N S O
h. I have difficulty finding my things (such as clothes, glasses, shoes, books, or pencils)	N S O
i. I have problems getting started on my own	N S O
j. I am impulsive (I don't think before doing)	N S O
k. I have trouble getting used to new situations (such as classes, groups, or friends)	N S O
l. I have a short attention span	N S O
m. I have a poor understanding of my own strengths and weaknesses (I try things that are too difficult or too easy for me)	N S O
n. I have outbursts for little reason	N S O
o. I get caught up in details and miss the main idea	N S O

p. I get out of control more than my friends	N S O
q. I get stuck on one topic or activity	N S O
r. I forget my name	N S O
s. I have trouble with jobs or tasks that have more than one step	N S O
t. I don't know when my actions bother others	N S O
u. I have problems organizing my written work	N S O
v. I get upset over small events	N S O
w. I have good ideas but do not get the job done (I lack follow-through)	N S O
x. I talk at the wrong time	N S O
y. I have trouble finishing tasks (such as chores or homework)	N S O
z. I don't notice when my behavior causes negative reactions until it is too late	N S O
aa. I overreact	N S O
bb. I have trouble remembering things, even for a few minutes (such as directions or phone numbers)	N S O
cc. I make careless errors	N S O
dd. I have problems waiting my turn	N S O
ee. It bothers me when I have to deal with changes (such as routines, foods, or places)	N S O
ff. I forget to hand in my homework, when it's completed	N S O
gg. I am slower than others when completing my work	N S O
hh. I am easily overwhelmed	N S O
ii. I don't plan ahead for future activities	N S O
jj. I have trouble counting to three	N S O
kk. I don't think ahead about possible problems	N S O
ll. I have difficulty finishing a task on my own	N S O
mm. I interrupt others	N S O
nn. I try the same approach to a problem over and over when it does not work (I get stuck)	N S O

oo. I forget instructions easily	N	O	S
pp. It takes me longer to complete my work	N	O	S
qq. My eyes fill with tears quickly over little things	N	O	S
rr. I have problems completing my work	N	O	S
ss. I have trouble thinking of a different way to solve a problem when I get stuck	N	O	S
tt. I am absentminded (forgetful)	N	O	S
uu. I have trouble prioritizing (ordering) my activities	N	O	S
vv. I think or talk out loud when working	N	O	S
ww. I don't think of consequences before acting	N	O	S
xx. I am unaware of my behavior when I am in a group	N	O	S
yy. I have trouble changing from one activity to another	N	O	S
zz. I have trouble carrying out the things that are needed to reach a goal (such as saving money for special items or studying to get good grades)	N	O	S
aaa. I have difficulty coming up with different ways of solving a problem	N	O	S
bbb. I cannot find the front door of my home	N	O	S
ccc. I have problems finishing long-term projects (such as papers or book reports)	N	O	S

PART 4. PSYCHOLOGICAL OUTCOMES

Compassion for Self [Self-Compassion Scale Short Form)

30. How I typically act towards myself in difficult times. Please read each statement carefully before answering. To the left of each item, indicate how often you behave in the stated manner.

1 = Almost Never and 5 = Almost Always

	Almost Never				**Almost Always**
m. When I fail at something important to me, I become consumed by feelings of inadequacy.	1	2	3	4	5
n. I try to be understanding and patient towards those aspects of my personality I don't like.	1	2	3	4	5

o. When something painful happens, I try to take a balanced view of the situation.	1	2	3	4	5
p. When I'm feeling down, I tend to feel like most other people are probably happier than I am.	1	2	3	4	5
q. I try to see my failings as part of the human condition (or of being human).	1	2	3	4	5
r. When I'm going through a very hard time, I give myself the caring and tenderness I need.	1	2	3	4	5
s. When something upsets me, I try to keep my emotions in balance.	1	2	3	4	5
t. When I fail at something that's important to me, I tend to feel alone in my failure.	1	2	3	4	5
u. When I'm feeling down, I tend to obsess and fixate on everything that's wrong.	1	2	3	4	5
v. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.	1	2	3	4	5
w. I'm disapproving and judgmental about my own flaws and inadequacies.	1	2	3	4	5
x. I'm intolerant and impatient towards those aspects of my personality I don't like.	1	2	3	4	5

Perceived Stress [Perceived Stress Scale (PSS)]

31. This question asks you about your feelings and thoughts during the last month. Please indicate *how often* you felt or thought a certain way.

0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

	Never Very Often				
k. In the last month, how often have you been upset because of something that happened unexpectedly?	0	1	2	3	4
l. In the last month, how often have you felt that you were unable to control the important things in your life?	0	1	2	3	4
m. In the last month, how often have you felt nervous and "stressed"?	0	1	2	3	4
n. In the last month, how often have you felt confident about your ability to handle your personal problems?	0	1	2	3	4
o. In the last month, how often have you felt that things were going your way?	0	1	2	3	4
p. In the last month, how often have you found that you could not cope with all the things that you had to do?	0	1	2	3	4
q. In the last month, how often have you been able to control irritations in your life?	0	1	2	3	4

r. In the last month, how often have you felt that you were on top of things?	0	1	2	3	4
s. In the last month, how often have you been angered because of things that were outside of your control?	0	1	2	3	4
t. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	0	1	2	3	4

Coping [Brief COPE]

32. This question deals with ways you've been coping with the stress in your life. Please indicate *to what extent* you felt or thought a certain way. Don't answer on the basis of whether it seems to be working or not—just whether or not you're doing it. Try to rate each item separately in your mind from the others. Make your answers as true FOR YOU as you can.

1 = Not at all 2 = A little bit 3 = A medium amount 4 = A lot

	Not at all			**A lot**
cc. I've been turning to my schoolwork or other activities to take my mind off things.	1	2	3	4
dd. I've been concentrating my efforts on doing something about the situation I'm in.	1	2	3	4
ee. I've been saying to myself "this isn't real."	1	2	3	4
ff. I've been using alcohol or other drugs to make myself feel better.	1	2	3	4
gg. I've been getting emotional support from others.	1	2	3	4
hh. I've been giving up trying to deal with it.	1	2	3	4
ii. I've been taking action to try to make the situation better.	1	2	3	4
jj. I've been refusing to believe that it has happened.	1	2	3	4
kk. I've been saying things to let my unpleasant feelings escape.	1	2	3	4
ll. I've been getting help and advice from other people.	1	2	3	4
mm. I've been using alcohol or drugs to help me get through it.	1	2	3	4
nn. I've been trying to see it in a different light, to make it seem more positive.	1	2	3	4
oo. I've been criticizing myself.	1	2	3	4
pp. I've been trying to come up with a strategy about what to do.	1	2	3	4
qq. I've been getting comfort and understanding from someone.	1	2	3	4
rr. I've been giving up the attempt to cope.	1	2	3	4
ss. I've been looking for something good in what is happening.	1	2	3	4
tt. I've been making jokes about it.	1	2	3	4
uu. I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.	1	2	3	4

vv. I've been accepting the reality of the fact that it has happened.	1	2	3	4
ww. I've been expressing my negative feelings.	1	2	3	4
xx. I've been trying to find comfort in my religion or spiritual beliefs.	1	2	3	4
yy. I've been trying to get advice or help from other people about what to do.	1	2	3	4
zz. I've been learning to live with it.	1	2	3	4
aaa. I've been thinking hard about what steps to take.	1	2	3	4
bbb. I've been blaming myself for things that happened.	1	2	3	4
ccc. I've been praying or meditating.	1	2	3	4
ddd. I've been making fun of the situation.	1	2	3	4

Emotion Regulation [Emotion Regulation Questionnaire (ERQ)]

33. We would like to ask you some questions about your emotional life, in particular, how you control (that is, regulate and manage) your emotions. The questions below involve two distinct aspects of your emotional life. One is your emotional experience, or what you feel like inside. The other is your emotional expression, or how you show your emotions in the way you talk, gesture, or behave. Although some of the following questions may seem similar to one another, they differ in important ways. For each item, please answer using the following scale:

1 = Strongly Disagree 4 = Neutral 7 = Strongly Agree

	Strongly Disagree			**Neutral**			**Strongly Agree**
k. When I want to feel more *positive* emotion (such as joy or amusement), I *change what I'm thinking about.*	1	2	3	4	5	6	7
l. I keep my emotions to myself.	1	2	3	4	5	6	7
m. When I want to feel less *negative* emotion (such as sadness or anger), I *change what I'm thinking about.*	1	2	3	4	5	6	7
n. When I am feeling positive emotions, I am careful not to express them.	1	2	3	4	5	6	7
o. When I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm.	1	2	3	4	5	6	7
p. I control my emotions by not expressing them.	1	2	3	4	5	6	7
q. When I want to feel more *positive* emotion, I *change the way I'm thinking* about the situation.	1	2	3	4	5	6	7
r. I control my emotions by *changing the way I think* about the situation I'm in.	1	2	3	4	5	6	7
s. When I am feeling *negative* emotions, I make sure not to express them.	1	2	3	4	5	6	7

t. When I want to feel less *negative* emotion, I *change the way I'm thinking* about the situation.	1	2	3	4	5	6	7

Generalized Anxiety Disorder 7-item (GAD-7) Scale

34. Over the last 2 weeks, how often have you been bothered by the following problems?

0 = Not at all sure 1 = Several days 2 = Over half the days 3 = Nearly every day

	Never			**Often**
h. Feeling nervous, anxious, or on edge	0	1	2	3
i. Not being able to stop or control worrying	0	1	2	3
j. Worrying too much about different things	0	1	2	3
k. Trouble relaxing	0	1	2	3
l. Being so restless that it's hard to sit still	0	1	2	3
m. Becoming easily annoyed or irritable	0	1	2	3
n. Feeling afraid as if something awful might happen	0	1	2	3

Global Early Adolescence Study (GEAS) Depression Scale

35. During adolescence we know that people your age often experience emotional ups and downs. That is normal. Here we would like to better understand if you experience emotional lows a lot.

We would like to know a little about how you are feeling. Please tell me how much you agree with the following statements:

0 = Disagree a lot 1 = Disagree a little 2 = Agree a little 3 = Agree a lot

	Disagree a lot	**Disagree a little**	**Agree a little**	**Agree a lot**
g. I felt miserable or unhappy.	0	1	2	3
h. I blame myself when things go wrong.	0	1	2	3
i. I worry for no good reason.	0	1	2	3
j. I am so unhappy I can't sleep at night.	0	1	2	3
k. I feel sad.	0	1	2	3
l. I am so unhappy I think of harming myself.	0	1	2	3

PART 5. SOCIAL OUTCOMES

Social Competence [Social Competence Scale for Teenagers]

36. For the questions below, the answer choices for questions a, b, and c are:

1 = Not at all like me | 2 = A little like me | 3 = Somewhat like me | 4 = A lot like me | 5 = Exactly like me

	Not at all like me				Exactly like me
Please indicate how much statements a, b, and c describe you.					
j. I avoid making other kids look bad.	1	2	3	4	5
k. If two of my friends are fighting, I find a way to work things out.	1	2	3	4	5
l. When I work in school groups, I do my fair share.	1	2	3	4	5

The answer choices for questions d to i are:
1 = None of the time | 2 = A little of the time | 3 = Some of the time | 4 = Most of the time | 5 = All of the time

	None of the time				All of the time
Please indicate how often the things in questions d-I happen. How often…					
m. Do you get along well with people of different races, cultures and religions?	1	2	3	4	5
n. Do you listen to other students' ideas?	1	2	3	4	5
o. Do you control your anger when you have a disagreement with a friend?	1	2	3	4	5
p. Can you discuss a problem with a friend without making things worse?	1	2	3	4	5
q. Do you follow the rules at a park, theater, or sports event?	1	2	3	4	5
r. Do you respect other points of view, even if you disagree?	1	2	3	4	5

Connectedness [The Social Connectedness Scale – Revised]

37. Circle the answer that shows how much you agree or disagree with each of the following statements.

1 = Strongly Agree 6 = Strongly Disagree

	Strongly Agree					Strongly Disagree
i. I feel disconnected from the world around me.	1	2	3	4	5	6
j. Even around people I know, I don't feel that I really belong.	1	2	3	4	5	6
k. I feel so distant from people.	1	2	3	4	5	6
l. I have no sense of togetherness with my peers.	1	2	3	4	5	6

m. I don't feel related to anyone.	1	2	3	4	5	6
n. I catch myself losing all sense of connectedness with society.	1	2	3	4	5	6
o. Even among my friends, there is no sense of brother/sisterhood.	1	2	3	4	5	6
p. I don't feel that I participate with anyone or any group.	1	2	3	4	5	6

Compassion for Others [Compassion for Others Scale]

38. How I typically act towards myself in difficult times. Please read each statement carefully before answering. To the left of each item, indicate how often you behave in the stated manner.

1 = Almost Never and 5 = Almost Always

	Almost Never				**Almost Always**
y. When people cry in front of me, I often don't feel anything at all.	1	2	3	4	5
z. Sometimes when people talk about their problems, I feel like I don't care.	1	2	3	4	5
aa. I don't feel emotionally connected to people in pain.	1	2	3	4	5
bb. I pay careful attention when other people talk to me.	1	2	3	4	5
cc. I feel detached from others when they tell me their tales of woe (or stories that about their challenges).	1	2	3	4	5
dd. If I see someone going through a difficult time, I try to be caring toward that person.	1	2	3	4	5
ee. I often tune out when people tell me about their troubles.	1	2	3	4	5
ff. I like to be there for others in times of difficulty.	1	2	3	4	5
gg. I notice when people are upset, even if they don't say anything.	1	2	3	4	5
hh. When I see someone feeling down, I feel like I can't relate to them.	1	2	3	4	5
ii. Everyone feels down sometimes, it is part of being human.	1	2	3	4	5
jj. Sometimes I am cold to others when they are down and out.	1	2	3	4	5
kk. I tend to listen patiently when people tell me their problems.	1	2	3	4	5
ll. I don't concern myself with other people's problems.	1	2	3	4	5
mm. It's important to recognize that all people have weaknesses and no one's perfect.	1	2	3	4	5
nn. My heart goes out to people who are unhappy.	1	2	3	4	5
oo. Despite my differences with others, I know that everyone feels pain just like me.	1	2	3	4	5
pp. When others are feeling troubled, I usually let someone else attend to them.	1	2	3	4	5
qq. I don't think much about the concerns of others.	1	2	3	4	5

rr. Suffering is just a part of the common human experience.	1	2	3	4	5
ss. When people tell me about their problems, I try to keep a balanced perspective on the situation.	1	2	3	4	5
tt. I can't really connect with other people when they're suffering.	1	2	3	4	5
uu. I try to avoid people who are experiencing a lot of pain.	1	2	3	4	5
vv. When others feel sadness, I try to comfort them.	1	2	3	4	5

Global Early Adolescence Study (GEAS)

39. Is there anything you are going through or dealing with that you would like to discuss with someone?
    a. Yes
    b. No

References (*Provided for IRB approval purposes; will not be included in the survey when administered*)

[a] Finkelhor D, Shattuck A, Turner H, Hamby S. Improving the Adverse Childhood Experiences Study Scale. Journal of the American Medical Association Pediatrics. 2013;167(1):70–75

[a] Cronholm PF, Forke CM, Wade R, Bair-Merritt MH, Davis M, Harkins-Schwarz M, Pachter LM, Fein JA. Adverse childhood experiences: expanding the concept of adversity. American Journal of Preventive Medicine. 2015; 49(3): 354-361.

[a] Mersky JP, Janczewski CE, Topitzes J. Rethinking the measurement of adversity: moving toward second-generation research on adverse childhood experiences. Child Maltreatment. 2017; 22(1): 58-68.

[a] Finkelhor D, Shattuck A, Turner H, Hamby S. Improving the Adverse Childhood Experiences Study Scale. Journal of the American Medical Association Pediatrics. 2013;167(1):70–75

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[a] Finkelhor D, Shattuck A, Turner H, Hamby S. Improving the Adverse Childhood Experiences Study Scale. Journal of the American Medical Association Pediatrics. 2013;167(1):70–75

[a] Bethell C, Gombojav N, Solloway M, Wissow L. Adverse childhood experiences, resilience and mindfulness-based approaches: common denominator issues for children with emotional, mental, or behavioral problems. Child and Adolescent Psychiatric Clinics of North America. 2016; 25(2): 139-56.

[a] Giovanelli A, Reynolds AJ, Mondi CF, Ou S. Adverse childhood experiences and adult well-being in a low-income, urban cohort. Pediatrics. 2016; 137(4): 1-13.

[a] Mersky JP, Janczewski CE, Topitzes J. Rethinking the measurement of adversity: moving toward second-generation research on adverse childhood experiences. Child Maltreatment. 2017; 22(1): 58-68.

[a] Brockie TN, Dana-Sacco G, Wallen GR, Wilcox HC, Campbell JC. The Relationship of Adverse Childhood Experiences to PTSD, Depression, Poly-Drug Use and Suicide Attempt in Reservation-Based Native American Adolescents and Young Adults. American Journal of Community Psychology. 2015; 55(3-4): 411-421.

[a] Cronholm PF, Forke CM, Wade R, Bair-Merritt MH, Davis M, Harkins-Schwarz M, Pachter LM, Fein JA. Adverse childhood experiences: expanding the concept of adversity. American Journal of Preventive Medicine. 2015; 49(3): 354-361.

Appendix G: Principal Component Analysis (PCA) and Exploratory Factor Analysis (EFA) Findings Summary

PCA: Principal Component Analysis – How many latent concepts are being captured
EFA: Exploratory Factor Analysis – Poor if factors loading (<.4) and high uniqueness

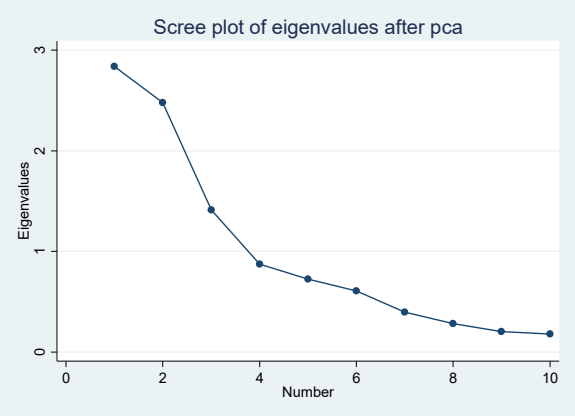
- Red highlighting indicates poor factor loadings (significantly below .4)
- Yellow highlighting indicates borderline factor loadings (.3-.4; e.g., .36)

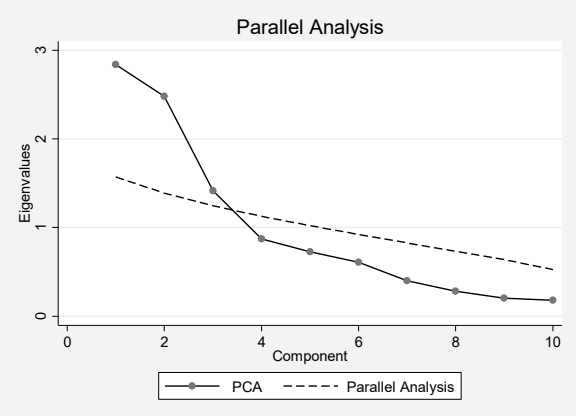
Outcome 1: Attention [ACTeRS: ADD-H Comprehensive Teacher's Rating Scale – Self-report Questionnaire]

- Used pre-survey data due to greater missingness, pre n=87, post n=89

Round 1

- 3 latent concepts found
- One question (#3) did not load well; borderline (.36/.37)
- Forced one latent concept because this Attention Scale a published valid/reliable scale – presumably with one underlying latent concept





Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Factor3	Uniqueness
pre_attn1	0.0019	0.6997	0.0498	0.5010
pre_attn2	-0.0138	-0.0006	0.8119	0.3395
pre_attn3	0.2182	0.3659	-0.1414	0.7854
pre_attn4	-0.0785	0.1546	0.4854	0.7188
pre_attn5	-0.0337	0.9665	-0.0550	0.0801
pre_attn6	0.0027	0.0104	0.8487	0.2782
pre_attn7	-0.0053	0.7827	0.1044	0.3617
pre_attn8	0.1814	-0.1710	0.4692	0.7499
pre_attn9	1.8977	-0.0181	-0.0002	-2.5932
pre_attn10	-0.0169	0.0127	0.5384	0.7075

Round 2

- Forced 1 latent concept because this scale was presumably developed to measure one scale, but it still showed 3 latent concepts; indicated this scale may not be working as intended in this study population/data set
- Factor loadings even poorer: 4 with poor factor loading and 3 with borderline factor loading
- Decided not to use this scale because it is not appropriate for the study population/data set

Rotated factor loadings (pattern matrix) and unique variances

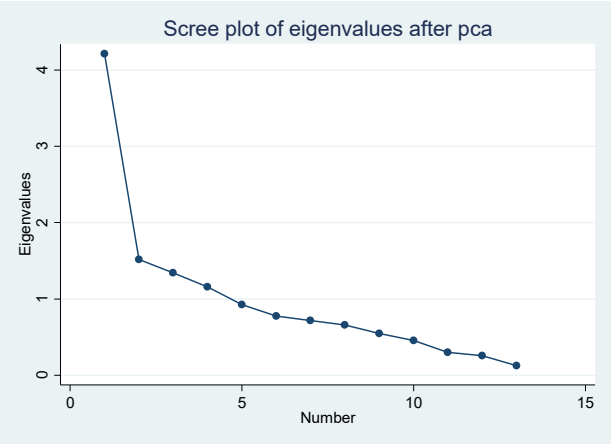
Variable	Factor1	Uniqueness
pre_attn1	0.6913	0.5222
pre_attn2	0.2899	0.9160
pre_attn3	0.3292	0.8917
pre_attn4	0.3297	0.8913
pre_attn5	0.7929	0.3712
pre_attn6	0.3106	0.9035
pre_attn7	0.8059	0.3506
pre_attn8	0.0925	0.9915
pre_attn9	0.1811	0.9672
pre_attn10	0.2340	0.9453

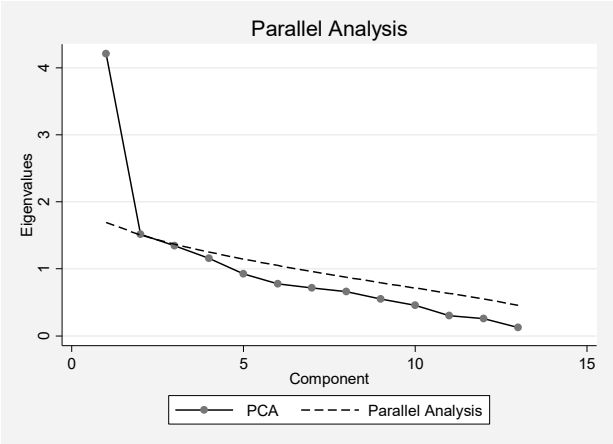
Outcome 2: BRIEF2-SR [Behavior Regulation and Metacognition/Executive Function, Self-Report Version], GEC (General Executive Composite)

- Error: pcamat r(R), n(89) | r(R) not positive (semi)definite → Stata was unable to produce a factor loadings matrix
- Tried a force option, but it would not yield results
- GEC is not appropriate for this study population/data set; chose to explore the BRI, ERI, and CRI subscales that comprise the GEC

<u>Outcome 2A: BRI (BRIEF2-SR Behavior Regulation Index)</u>

- Used pre-survey data due to greater missingness, n=89 pre vs. n=91 post
- 1 latent concept found, 2 questions did not loading well and a third was borderline
- No items removed because only one item can be removed (maximum) to maintain scale integrity
- Chose to keep, but conclusions drawn should be stated with caveats regarding PCA analysis



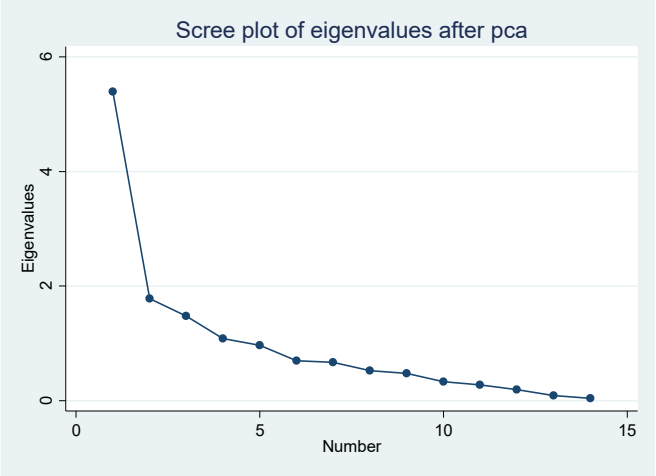


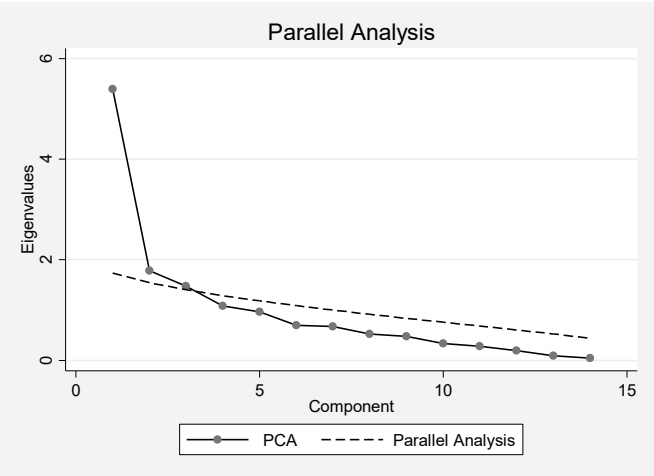
Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Uniqueness
pre_brief1	0.1792	0.9679
pre_brief4	0.5408	0.7075
pre_brief10	0.6346	0.5972
pre_brief13	0.3369	0.8865
pre_brief16	0.6153	0.6213
pre_brief20	0.5631	0.6829
pre_brief24	0.4242	0.8201
pre_brief26	0.5713	0.6736
pre_brief30	0.5788	0.6650
pre_brief39	0.6616	0.5622
pre_brief48	0.2014	0.9594
pre_brief49	0.6079	0.6304
pre_brief50	0.5646	0.6812

Outcome 2B: ERI [BRIEF2-SR Emotion Regulation Index]

- Used pre-survey data due to greater missingness, n=90 pre vs. n=91 post
- 3 latent concepts found; indicated this scale might not be working as intended in this study population/data set
- One item had borderline factor loading





1st Round: Rotated factor loadings (pattern matrix) and unique variances

Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Factor3	Uniqueness
pre_brief2	0.3001	0.0823	0.3242	0.6583
pre_brief6	0.4990	-0.1541	-0.0716	0.8241
pre_brief11	-0.0621	-0.0932	0.8399	0.4001
pre_brief14	0.9420	-0.0627	-0.1930	0.2850
pre_brief17	0.4286	0.0743	0.3762	0.4632
pre_brief22	0.8042	-0.0801	0.0422	0.3855
pre_brief27	0.7025	0.0284	0.0355	0.4601
pre_brief31	-0.1256	-0.0004	0.8667	0.3313
pre_brief34	0.1440	0.5320	-0.0320	0.6357
pre_brief40	0.0887	0.6600	-0.0623	0.5367
pre_brief43	0.5666	0.1819	0.0037	0.5352
pre_brief45	-0.0538	0.9356	-0.0325	0.2020
pre_brief51	0.0741	0.4033	0.2259	0.6446
pre_brief53	-0.0987	0.9443	-0.0240	0.2160

2nd Round:

- Forced 1 latent concept, one item still did not load well
- Removed this question (BRIEF2 question #6) because the BREIF2 Manual specified that one item (maximum) may be removed (or blank) without compromising the integrity of the measure

Rotated factor loadings (pattern matrix) and unique variances

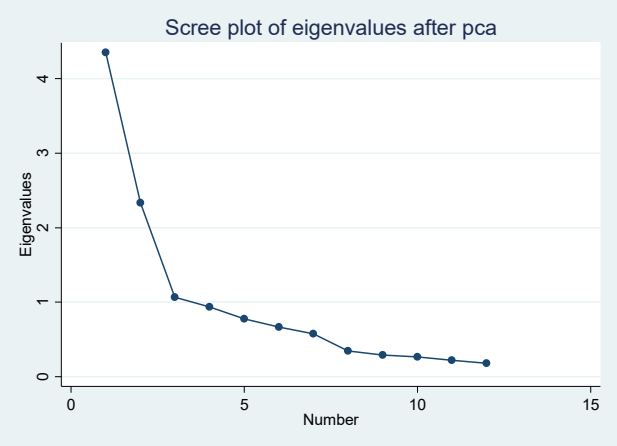
Variable	Factor1	Uniqueness
pre_brief2	0.5616	0.6846
pre_brief6	0.2448	0.9401
pre_brief11	0.4227	0.8213
pre_brief14	0.5875	0.6549
pre_brief17	0.7029	0.5060
pre_brief22	0.6401	0.5903
pre_brief27	0.6477	0.5805
pre_brief31	0.4596	0.7887
pre_brief34	0.5589	0.6876
pre_brief40	0.5931	0.6482
pre_brief43	0.6508	0.5764
pre_brief45	0.6937	0.5188
pre_brief51	0.5721	0.6727
pre_brief53	0.6654	0.5572

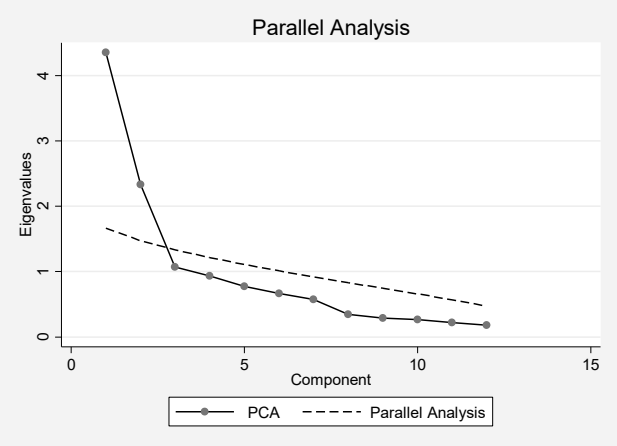
Outcome 2C: CRI [BRIEF2-SR Cognitive Regulation Index]

- Used pre-survey data due to greater missingness, n=90 pre vs. n=91 post
- Error: . pcamat r(R), n(90); r(R) not positive (semi)definite
    - Forcing doesn't work – ran: pcamat r(R), n(90) force – got error: r(R) not positive (semi)definite, r(506)
- Error persisted with CRI; not able to include given the error
- This measure was not appropriate for the study population/data set

Outcome 3: SCS – compassion for self (pre)

- Used pre-survey data due to greater missingness, pre n=86 vs. post n=87
- Found 2 latent concepts being captured
- Found two items with borderline factor loading



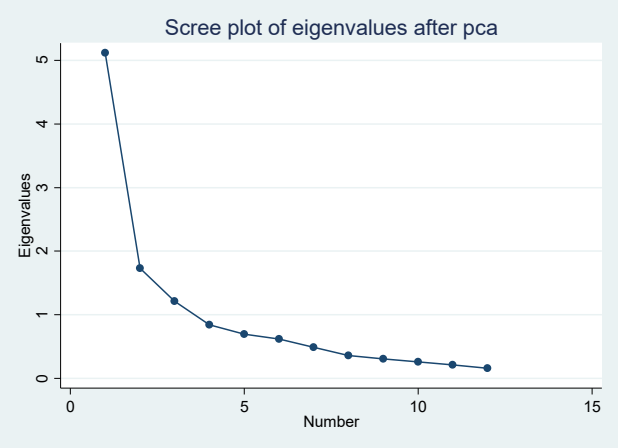


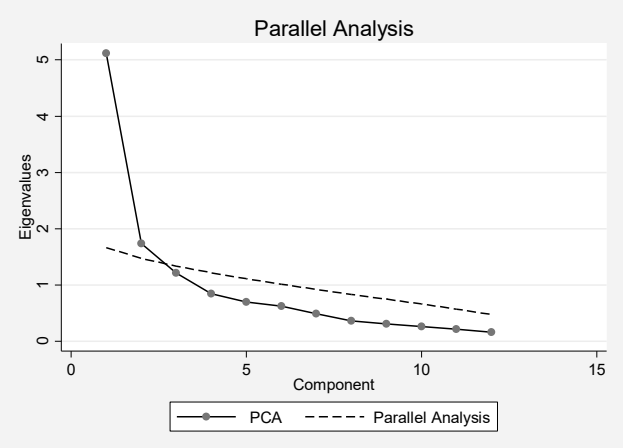
Factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Uniqueness
pre_scs1	0.5704	-0.4212	0.4973
pre_scs2	0.4304	0.5404	0.5228
pre_scs3	0.3717	0.4416	0.6668
pre_scs4	0.3807	-0.3009	0.7645
pre_scs5	0.5783	0.5076	0.4079
pre_scs6	0.6340	0.2127	0.5528
pre_scs7	0.3186	0.4004	0.7381
pre_scs8	0.6374	-0.4067	0.4283
pre_scs9	0.7242	-0.2689	0.4032
pre_scs10	0.3967	0.4823	0.6099
pre_scs11	0.6907	-0.2000	0.4830
pre_scs12	0.8314	-0.2371	0.2525

Round 2: for comparison, ran post-survey data because pre- and post-survey data had same missingness

- One borderline factor loading, but decided not to remove items
- Considerations: The SCS used was a short form (published by the same author) of a 24-item scale. Removing an item might have increased validity but may have also reduced reliability because questions are paired to capture certain concepts. Of the 12 questions total, there were six pairs on: self-kindness, self-judgment, common humanity, isolation, mindfulness, and over-identified. Chose to include items #4 and #7 to maintain the integrity of the scale and given that the borderline factor loading was close to the .4 threshold. The author of the scale did not indicate that items could be removed while maintaining the integrity of the scale.

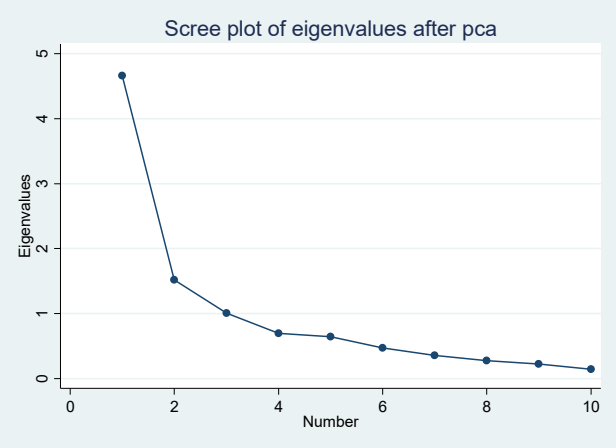


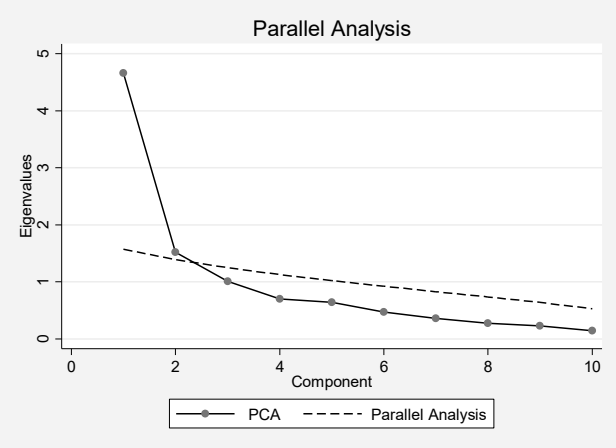


Variable	Factor1	Factor2	Uniqueness
post_scs1	0.6822	-0.0554	0.5714
post_scs2	0.0905	0.5472	0.6402
post_scs3	0.1544	0.5177	0.6238
post_scs4	0.3802	0.2538	0.6892
post_scs5	-0.0102	0.7185	0.4914
post_scs6	0.3719	0.5305	0.3722
post_scs7	-0.1300	0.7753	0.4884
post_scs8	0.7221	-0.0277	0.4989
post_scs9	0.6712	0.0054	0.5457
post_scs10	-0.1156	0.7410	0.5280
post_scs11	0.9347	-0.0800	0.1988
post_scs12	0.6625	0.1137	0.4688

Outcome 4: Perceived Stress Scale (PSS) (pre or post)

- Used pre-survey data due to greater missingness, pre n=87 vs. post n=89
- Found 2 latent concepts being captured; yet, this was a published scale designed to capture one latent concept. May indicate that this scale is operating differently than intended in the study population/data set.





Round 1:

- Found 2 latent concepts being captured
- No item had low enough factor loadings to consider excluding

Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Factor2	Uniqueness
pre_pss1	0.7397	-0.0380	0.4809
pre_pss2	0.7911	0.0485	0.3315
pre_pss3	0.8663	-0.1194	0.3439
pre_pss4	0.0371	0.8340	0.2707
pre_pss5	0.1973	0.4281	0.6891
pre_pss6	0.5495	0.1793	0.5624
pre_pss7	0.0404	0.6259	0.5801
pre_pss8	-0.1151	0.8185	0.4158
pre_pss9	0.6111	-0.0339	0.6472
pre_pss10	0.7249	0.1204	0.3683

Factor rotation matrix

	Factor1	Factor2
Factor1	0.9406	0.7828
Factor2	-0.3394	0.6222

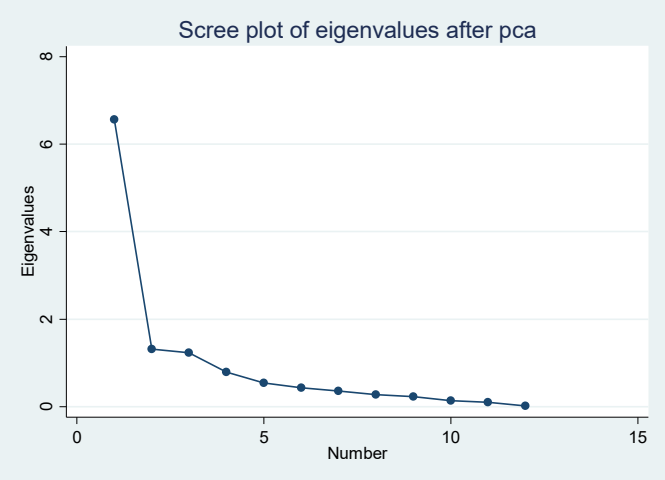
Outcome 5: Coping [Brief COPE]

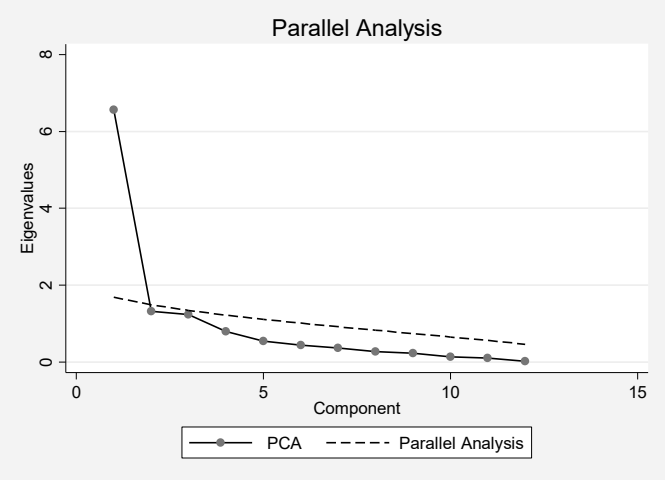
5A: Cope Avoid

- Used pre-survey data due to greater missingness, pre n=81 vs. post n=87
- Error: (R) not positive (semi)definite, r(506)
- This measure was not appropriate for the study population/data set

5B: Cope Approach

- Used pre-survey data, but both pre- and post-survey data had same level of missingness, n=82
- Found 1 latent concept being captured
- No item had low enough factor loadings to consider excluding





Round 1

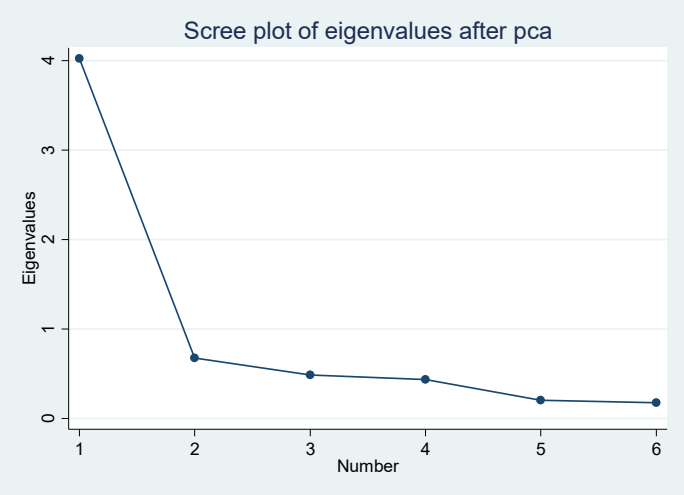
Rotated factor loadings (pattern matrix) and unique variances

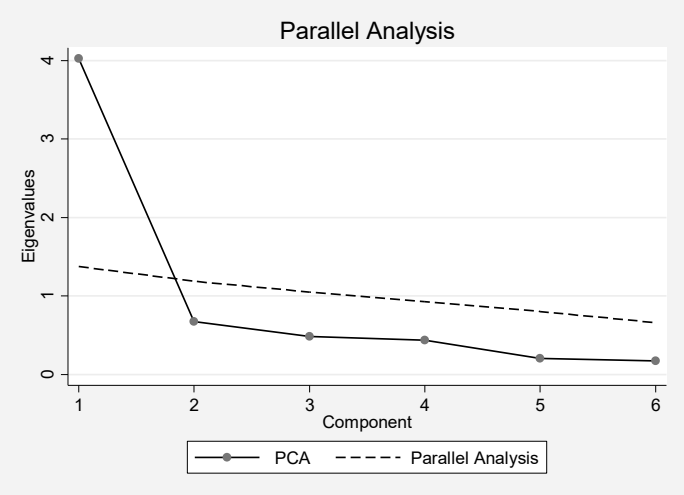
Variable	Factor1	Uniqueness
pre_cope2	0.7257	0.4733
pre_cope5	0.8062	0.3500
pre_cope7	0.7867	0.3811
pre_cope10	0.8746	0.2351
pre_cope12	0.6084	0.6298
pre_cope14	0.6343	0.5977
pre_cope15	0.7296	0.4677
pre_cope17	0.6963	0.5151
pre_cope20	0.5454	0.7026
pre_cope23	0.7902	0.3755
pre_cope24	0.4668	0.7821
pre_cope25	0.7937	0.3700

Outcome 6: Emotion Regulation [Emotion Regulation Questionnaire (ERQ)]

6A: Cognitive Reappraisal

- Used pre-survey data due to greater missingness, pre n=85 vs. post n=86
- Found 1 latent concept being captured
- No item had low enough factor loadings to consider excluding





Round 1

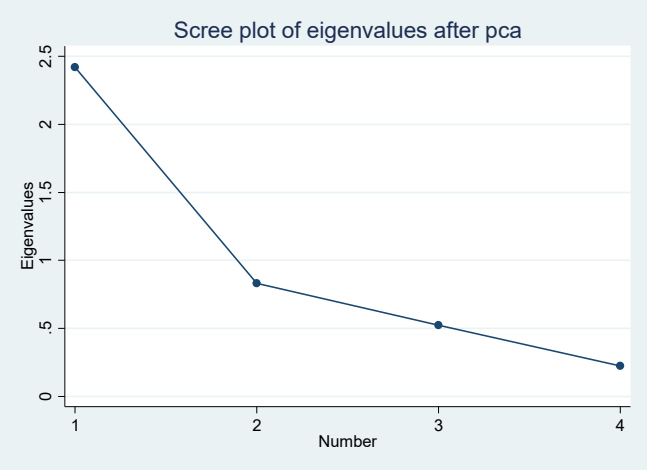
- Found 1 latent concept

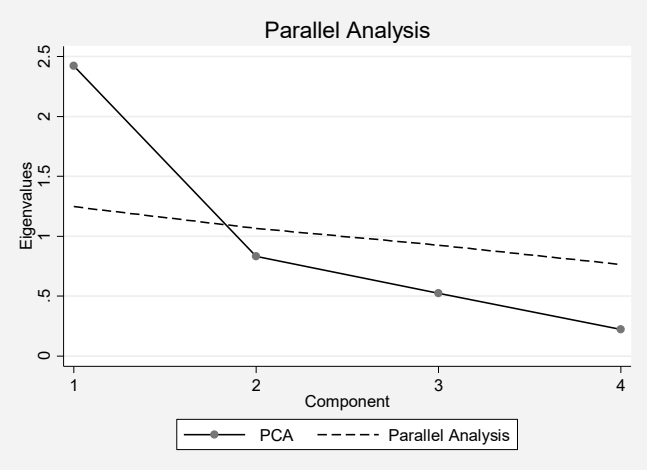
Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Uniqueness
pre_ereg1	0.7547	0.4304
pre_ereg3	0.7101	0.4958
pre_ereg5	0.5881	0.6542
pre_ereg7	0.8158	0.3345
pre_ereg8	0.9064	0.1784
pre_ereg10	0.8752	0.2339

6B: Expression Suppression

- Found 1 latent concept
- One item had borderline factor loading



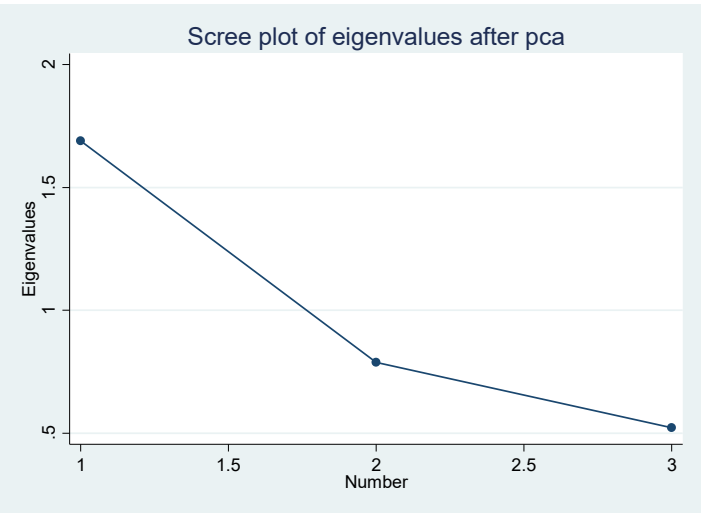


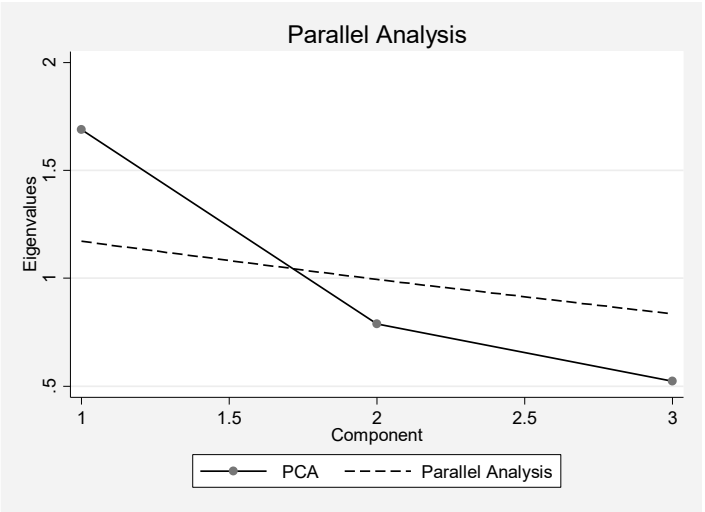
varia

Variable	Factor1	Uniqueness
pre_ereg2	0.7278	0.4703
pre_ereg4	0.3657	0.8663
pre_ereg6	0.9762	0.0470
pre_ereg9	0.6711	0.5497

Round 2

- Examined without item #4 (pre_ereg4) and again found 1 latent concept
- Chose to keep all 4 items because the Expression Suppression subscale was already quite small (4 questions total), was measuring 1 latent concept with all 4 items, and the borderline factor loading was close to the .4 threshold. Additionally, there were no indications by the creators of the ERQ that the integrity of the scale would be maintained if an item were removed.



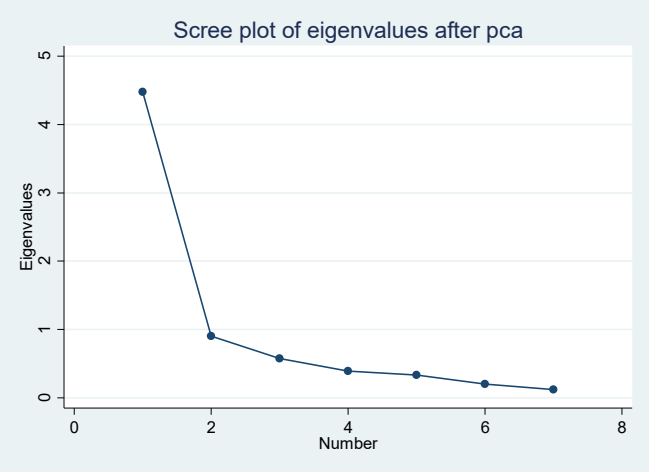


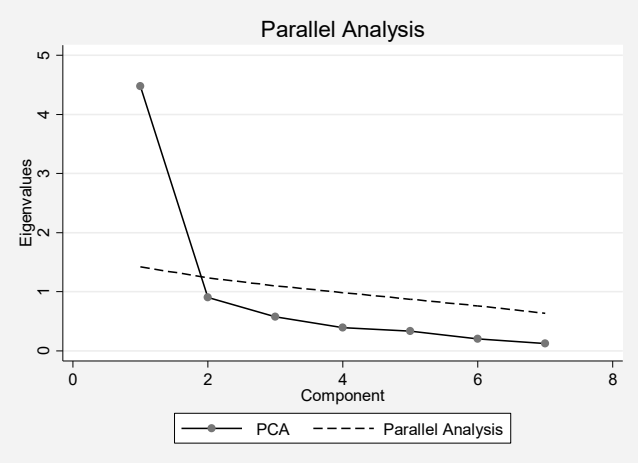
Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Uniqueness
pre_ereg2	0.8162	0.3338
pre_ereg6	0.9763	0.0469
pre_ereg9	0.5651	0.6806

Outcome 7: Anxiety Symptoms [General Anxiety Disorder 7-item Scale, GAD-7]

- Used pre-survey data due to greater missingness, pre n=88 vs. post n=89
- Found 1 latent concept being captured
- No item had low enough factor loadings to consider excluding





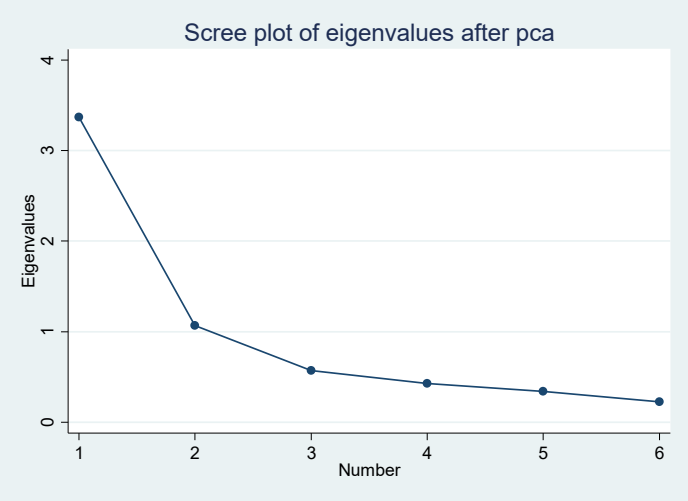
Round 1

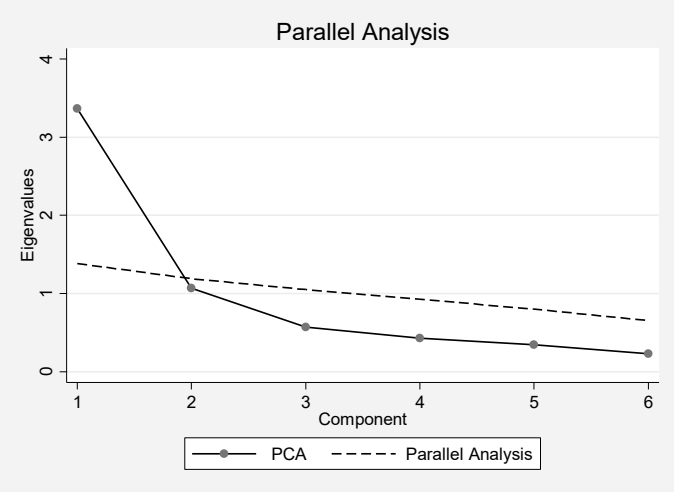
Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Uniqueness
pre_anx1	0.8631	0.2550
pre_anx2	0.8676	0.2472
pre_anx3	0.8553	0.2685
pre_anx4	0.7821	0.3883
pre_anx5	0.6777	0.5407
pre_anx6	0.5455	0.7025
pre_anx7	0.7085	0.4980

Outcome 8: Depression Symptoms [GEAS Depression Symptoms Index]

- Used pre-survey data due to greater missingness, pre n=82 vs. post n=89
- Found 1 latent concept being captured





Round 1

- One item with borderline factor loading. Chose to include given the borderline factor loading was close to the .4 threshold, and there were no indications by the creators of the GEAS Depression Index that the integrity of the index would be maintained if an item were removed.
    - Upon examination, may be due to the nature of the question: "I worry for no good reason". This item in the index may be picking up another latent concept, like anxiety, but this would merit further study beyond the scope of the AMA Health Study.

Rotated factor loadings (pattern matrix) and unique variances

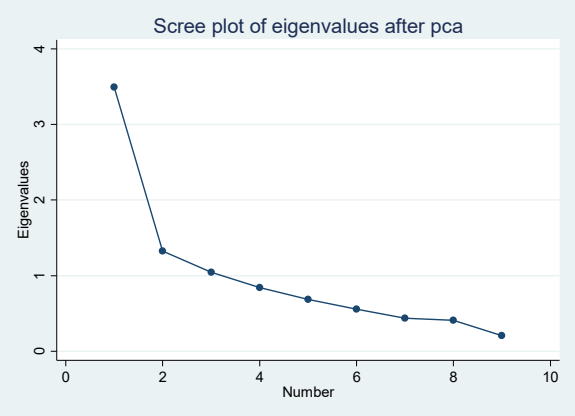
Variable	Factor1	Uniqueness
pre_dep1	-0.6507	0.5766
pre_dep2	0.5764	0.6678
pre_dep3	0.3537	0.8749
pre_dep4	0.7713	0.4050
pre_dep5	0.8504	0.2768
pre_dep6	0.8656	0.2507

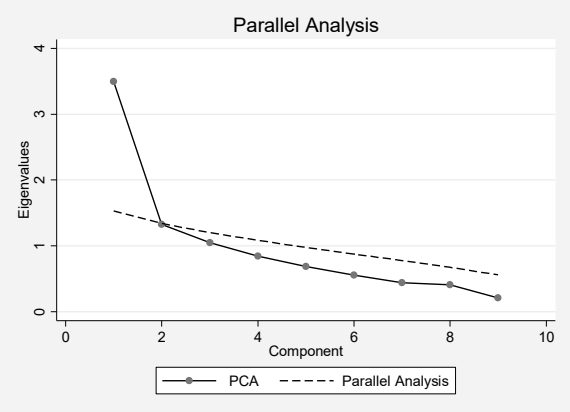
Outcome 9: Social Competence [Social Competence Scale for Teenagers]

- Used pre-survey data, but equal missingness in pre- and post-survey data, n=86

Round 1

- Found 1 latent concept being captured
- One item had low factor loading and one had borderline factor loading
- Chose to keep all items given that there were no indications by the authors of the scale that the scale's integrity would be maintained if items were removed





Rotated factor loadings (pattern matrix) and unique variances

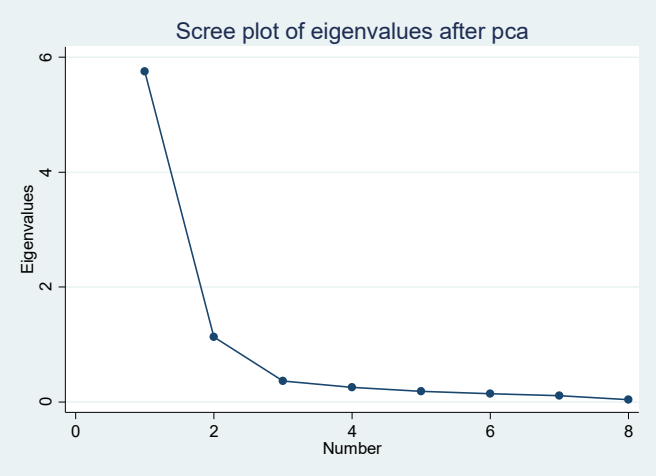
Variable	Factor1	Uniqueness
pre_soccomp1	0.5361	0.7126
pre_soccomp2	0.2697	0.9273
pre_soccomp3	0.3119	0.9027
pre_soccomp4	0.6722	0.5482
pre_soccomp5	0.8502	0.2772
pre_soccomp6	0.6824	0.5344
pre_soccomp7	0.4845	0.7652
pre_soccomp8	0.4186	0.8248
pre_soccomp9	0.6476	0.5806

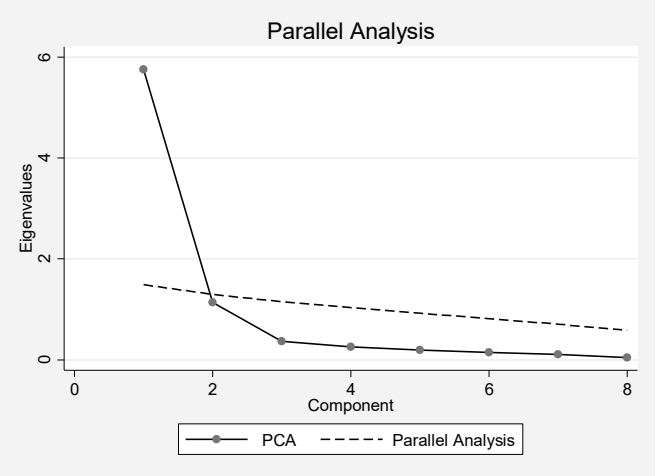
Outcome 10: Connectedness [The Social Connectedness Scale – Revised]

- Used pre-survey data due to greater missingness, pre n=83

Round 1

- Found 1 latent concept being captured
- No item had low enough factor loadings to consider excluding





Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor1	Uniqueness
pre_connect1	0.6877	0.5271
pre_connect2	0.8648	0.2521
pre_connect3	0.8619	0.2571
pre_connect4	0.9213	0.1513
pre_connect5	0.9302	0.1348
pre_connect6	0.8273	0.3156
pre_connect7	0.7139	0.4904
pre_connect8	0.7674	0.4110

Outcome 11: Compassion for Others [Compassion for Others Scale]

- Used pre-survey data due to greater missingness, pre n=77
- Could not determine latent concepts → Error: r(R) not positive (semi)definite, r(506)
- Error indicated that this measure was not appropriate for the study population/data set

Summary

1 latent concept	>1 latent concept	Do not work [error: r(R) not positive (semi)definite, r(506)]
1. **Behavior Regulation Index, BRI** 2. **Compassion for self** 3. **Coping—approach** 4. **Em Reg—cog reappraisal** 5. **Em Reg—expression suppression** 6. **Anxiety symptoms** (removed 2 of 7) 7. **Depression symptoms** (removed 2 of 6) 8. **Self-harm question** (1 question of Depression Symptoms Index) 9. **Social competence** 10. **Connectedness**	**11. PSS: 2 latent concepts** 12. **ERI: 3 latent concepts** (removed 1 of 14 items)	**Attention** (2 latent concepts, 7 of 10 questions with borderline or poor factor loading) **GEC** (composite of BRI, ERI, CRI composite) **CRI** **Coping—avoid** **Compassion for others**

Appendix H: Detailed Outcome Tables

For all tables in Appendix H: *p<0.05 **p<0.01 ***p<0.001 | SE is Adjusted Mean Standard Error

1) Behavior Regulation Index (BRI), BRIEF2 Subscale

Outcome (n)	**Pre Mean**	**Post Mean**	**Effect Size (SE)**	**% Change from Pre-survey Mean**	**p-value**
BRI (n=89)	**20.08**	**19.82**	**-.26 (.43)**	**-1.29%**	**0.550**
School					
Cleveland (n=38)	19.73	19.47	-.26 (.61)	-1.32%	0.668
Lincoln (n=28)	20.54	10.36	-.18 (.88)	-0.88%	0.841
Madison (n=23)	20.09	19.74	-.35 (.83)	-1.74%	0.678
Grade					
10th (n=19)	19.32	19.11	-.21 (.53)	-1.09%	0.700
11th (n=37)	20.35	20.84	.49 (.72)	2.41%	0.505
12th (n=33)	20.21	19.09	-1.12 (.76)	-5.54%	0.151
Class Dose					
1 time (n=78)	19.87	20.12	.24 (.43)	1.21%	0.575
2+ times (n=11)	21.55	17.73	-3.82 (1.24)	-17.73%	<.05*
Gender					
Female (n=48)	19.77	19.60	-.17 (.56)	-0.86%	0.769
Male (n=33)	20.09	19.70	-.39 (.77)	-1.94%	0.611
Non-binary (n=8)	21.88	21.63	-.25 (1.40)	-1.14%	0.863
Sexual Orientation					
Heterosexual (n=60)	19.68	19.23	-.45 (.49)	-2.29%	0.359
LGBTQ+ (n=29)	20.90	21.03	.14 (.86)	0.67%	0.874
Race/Ethnicity					
White (n=54)	20.43	19.63	-.80 (.56)	-3.92%	0.164
Asian (n=7)	18.86	19	.14 (.86)	0.74%	0.873
Black (n=5)	21.8	21.2	-.6 (1.91)	-2.75%	0.770
Latino (n=5)	19.8	21.6	1.8 (1.66)	9.09%	0.338
Multiracial (n=17)	18.94	19.71	.76 (1.09)	4.01%	0.494
No answer (n=1)	22	22	0 (--)	0.00%	--
Nativity					
US-born (n=73)	19.84	19.78	-.06 (.46)	-0.30%	0.906
Non-US-born (n=15)	20.74	19.07	-1.67 (1.13)	-8.05%	0.162
No answer (n=1)	28	34	6 (--)	21.43%	--
SES					
Not low-SES (n=56)	19.63	19.13	-.5 (.53)	-2.55%	0.349
Low-SES (n=33)	20.85	21	.15 (.74)	0.72%	0.839
Standard ACEs					
0 ACES (n=20)	20.1	18.9	-1.2 (1.01)	-5.97%	0.252
1-3 ACEs (n=34)	19.5	19.3	-.18 (.52)	-0.92%	0.738
4-10 ACEs (n=34)	20.44	20.88	.44 (.77)	2.15%	0.569
No Answer (n=1)	27	19	-8 (--)	-29.63%	--
Expanded ACEs					
0 ACEs (n=6)	19.33	18.17	-1.17 (2.32)	-6.05%	0.636
1-3 ACEs (n=33)	19.85	19.24	-.61 (.60)	-3.07%	0.320
4-7 ACEs (n=30)	19.13	19.53	.4 (.70)	2.09%	0.573
8-14 ACEs (n=19)	21.84	21.84	0 (1.08)	0.00%	1.00
Readiness for Change					
Precontemplation Stage (n=21)	19.67	20.14	.48 (.80)	2.44%	0.557
Contemplation Stage (n=57)	10.75	19.49	-.26 (.53)	-2.42%	0.623
Preparation Stage (n=9)	23.22	21.22	-2 (1.80)	-8.61%	0.298
No answer (n=2)	19.5	19.5	0 (--)	0.00%	1.00

2) Emotion Regulation Index (ERI), BRIEF2 Subscale

Outcome (n)	**Pre Mean**	**Post Mean**	**Effect Size (SE)**	**% Change from Pre-survey Mean**	**p-value**
ERI (n=90)	**26.01**	**25.24**	**-.77 (.57)**	**2.19%**	**0.182**
School					
Cleveland (n=38)	24.94	25.08	.13 (.72)	0.52%	0.857
Lincoln (n=28)	26.64	25.39	-1.25 (1.10)	-4.69%	0.267
Madison (n=24)	26.96	25.33	-1.63 (1.27)	-6.05%	0.213
Grade					
10th (n=19)	26.58	25	-1.58 (.70)	-5.94%	<.05*
11th (n=38)	25.71	25.61	-.11 (.80)	-0.43%	0.897
12th (n=33)	26.03	24.97	-1.06 (1.19)	-4.07%	0.379
Class Dose					
1 time (n=79)	26.22	25.43	-.78 (.60)	-2.97%	0.194
2+ times (n=11)	24.55	23.91	-.64 (1.87)	-2.61%	0.741
Gender					
Female (n=49)	27.02	25.27	-1.76 (.68)	-6.51%	<.05*
Male (n=33)	23.67	24.88	1.21 (.96)	5.11%	0.215
Non-binary (n=8)	29.5	26.63	-2.88 (2.4)	-9.76%	0.272
Sexual Orientation					
Heterosexual (n=61)	25.02	25.07	.05 (.60)	0.20%	0.935
LGBTQ+ (n=29)	28.10	25.62	-2.48 (1.18)	-8.83%	<.05*
Race/Ethnicity					
White (n=54)	26.41	25.06	-1.35 (.78)	-5.11%	0.088
Asian (n=7)	23.57	24.71	1.14 (1.18)	4.48%	0.372
Black (n=5)	25.4	27.2	1.8 (2.2)	7.09%	0.459
Latino (n=5)	25.4	23.2	-2.2 (2.2)	-8.66%	0.374
Multiracial (n=18)	26.06	25.94	-.11 (1.30)	-0.42%	0.933
No answer (n=1)	27	27	0 (--)	0.00%	--
Nativity					
US-born (n=74)	25.81	25.24	-.57 (.63)	-2.21%	0.370
Non-US-born (n=15)	27.2	25.33	-1.86 (1.44)	-6.84%	0.217
No answer (n=1)	23	24	1 (--)	4.35%	--
SES					
Not low-SES (n=56)	26.04	24.91	-1.13 (.76)	-4.43%	0.144
Low-SES (n=34)	25.97	25.79	-.18 (.85)	-0.69%	0.836
Standard ACEs					
0 ACES (n=20)	26.85	24.5	-2.35 (1.06)	-8.75%	<.05*
1-3 ACEs (n=34)	24.97	24.24	-.74 (.96)	-2.96%	0.448
4-10 ACEs (n=35)	26.77	26.66	-.11 (.93)	-.041%	0.903
No Answer (n=1)	18	25	7 (--)	38.89%	--
Expanded ACEs					
0 ACEs (n=6)	26.83	23.67	-3.17 (1.40)	-11.82%	0.073
1-3 ACEs (n=33)	25.76	24.27	-1.48 (.95)	-5.75%	0.129
4-7 ACEs (n=30)	25.2	25.13	-.07 (1.00)	-0.28%	0.948
8-14 ACEs (n=20)	27.8	27.5	-.3 (1.23)	-1.08%	0.810
No answer (n=1)	18	25	7 (--)	38.89%	--
Readiness for Change					
Precontemplation Stage (n=21)	25.57	25.48	-.10 (1.27)	-0.39%	0.941
Contemplation Stage (n=57)	25.40	24.81	-.60 (.62)	-2.36%	0.342
Preparation Stage (n=9)	30.89	26.77	-4.11 (2.71)	-13.31%	0.167
No answer (n=3)	26	27.33	1.33 (2.40)	5.12%	0.635

3) Self-compassion Scale (SCS)

Outcome (n)	**Pre Mean**	**Post Mean**	**Effect Size (SE)**	**% Change from Pre-survey Mean**	**p-value**
SCS (n=87)	**2.61**	**2.91**	**.30 (.08)**	**11.49%**	**<.001*** **
School					
Cleveland (n=37)	2.83	3.17	.34 (.13)	12.01%	<.05*
Lincoln (n=28)	2.36	2.59	.23 (.16)	9.75%	0.150
Madison (n=22)	2.56	2.88	.32 (.16)	12.50%	0.059
Grade					
10th (n=19)	2.55	3.09	.54 (.15)	21.18%	<.01**
11th (n=36)	2.66	2.83	.18 (.11)	6.77%	0.129
12th (n=32)	2.59	2.89	.30 (.16)	11.58%	0.077
Class Dose					
1 time (n=76)	2.59	2.89	.30 (.09)	11.58%	<.01**
2+ times (n=11)	2.74	3.03	.29 (.25)	10.58%	0.282
Gender					
Female (n=47)	2.51	2.99	.48 (.11)	19.12%	<.001***
Male (n=33)	2.83	2.93	.11 (.13)	3.89%	0.430
Non-binary (n=7)	2.25	2.25	0 (.36)	0.00%	1.00
Sexual Orientation					
Heterosexual (n=58)	2.74	3.03	.29 (.10)	10.58%	<.01**
LGBTQ+ (n=29)	2.34	2.67	.32 (.15)	13.68%	<.05*
Race/Ethnicity					
White (n=54)	2.56	2.95	.40 (.11)	15.63%	<.001***
Asian (n=7)	2.88	2.83	-.05 (.36)	-1.74%	0.891
Black (n=4)	3.09	2.48	-.61 (.19)	-19.74%	<.05*
Latino (n=4)	2.52	2.91	.39 (.50)	15.48%	0.499
Multiracial (n=17)	2.57	2.84	.28 (.15)	10.89%	0.090
No answer (n=1)	2.55	3.82	1.27 (--)	49.80%	--
Nativity					
US-born (n=72)	2.63	2.94	.31 (.09)	11.79%	<.001***
Non-US-born (n=14)	2.55	2.85	.30 (.28)	11.76%	0.213
No answer (n=1)	1.82	1.18	-.63 (--)	-34.62%	--
SES					
Not low-SES (n=56)	2.64	2.98	.34 (.10)	12.88%	<.01**
Low-SES (n=31)	2.54	2.78	.24 (.14)	9.45%	0.106
Standard ACEs					
0 ACES (n=20)	2.74	2.98	.24 (.17)	8.76%	0.181
1-3 ACEs (n=34)	2.65	3.01	.36 (.14)	13.58%	<.05*
4-10 ACEs (n=32)	2.46	2.73	.26 (.13)	10.57%	0.058
No Answer (n=1)	3.18	3.82	.64 (--)	20.13%	--
Expanded ACEs					
0 ACEs (n=6)	2.79	3.17	.38 (.36)	13.62%	0.341
1-3 ACEs (n=33)	2.64	2.97	.33 (.12)	12.50%	<.05*
4-7 ACEs (n=30)	2.67	2.85	.18 (.15)	6.74%	0.231
8-14 ACEs (n=17)	2.33	2.74	.41 (.22)	17.60%	0.077
No answer (n=1)	3.18	3.82	.64 (--)	20.13%	--
Readiness for Change					
Precontemplation Stage (n=21)	2.74	2.80	.06 (.16)	2.19%	0.732
Contemplation Stage (n=55)	2.63	2.91	.28 (.10)	10.65%	<.01**
Preparation Stage (n=9)	2.23	3.36	1.13 (.21)	50.67%	<.001***
No answer (n=2)	2.27	2.09	-.18 (.18)	-7.93%	0.500

4) Perceived Stress

Outcome (n)	**Pre Mean**	**Post Mean**	**Effect Size (SE)**	**% Change from Pre-survey Mean**	**p-value**
Perceived Stress (n=88)	**23.28**	**22.06**	**-1.23 (.90)**	**-5.28%**	**0.179**
School					
Cleveland (n=37)	20.76	19.76	-1 (1.34)	-4.82%	0.462
Lincoln (n=28)	26	25.61	-.39 (1.66)	-1.50%	0.815
Madison (n=23)	24	21.43	-2.61 (1.84)	-10.88%	0.170
Grade					
10th (n=19)	23.21	20.68	-2.53 (2.04)	-10.90%	0.231
11th (n=38)	23.21	22.79	-.42 (1.23)	-1.81%	0.735
12th (n=31)	23.42	22	-1.42 (1.69)	-6.06%	0.407
Class Dose					
1 time (n=77)	23.47	22.29	-1.18 (.96)	-5.03%	0.220
2+ times (n=11)	22	20.45	-1.55 (2.89)	-7.05%	0.604
Gender					
Female (n=48)	24.94	22.31	-2.63 (1.11)	-10.55%	<.05*
Male (n=33)	20.15	20.91	.76 (1.55)	3.77%	0.629
Non-binary (n=7)	26.71	25.71	-1 (4.06)	3.74%	0.814
Sexual Orientation					
Heterosexual (n=60)	22.07	21.73	-.33 (1.04)	-1.50%	0.750
LGBTQ+ (n=28)	25.89	22.75	-3.14 (1.75)	-12.13%	0.083
Race/Ethnicity					
White (n=53)	23.57	20.57	-3 (1.23)	-12.73%	<.05*
Asian (n=7)	19.71	23	3.29 (3.84)	16.69%	0.425
Black (n=4)	21.25	26	4.75 (2.84)	22.35%	0.193
Latino (n=5)	25.2	23	-2.2 (2.48)	-8.73%	0.425
Multiracial (n=18)	23.39	25.06	1.67 (1.36)	7.14%	0.236
No answer (n=1)	30	20	-10 (--)	-33.33%	--
Nativity					
US-born (n=73)	22.62	21.26	-1.36 (.95)	-6.01%	0.160
Non-US-born (n=15)	26.29	25.21	-1.07 (2.79)	-4.07%	0.707
No answer (n=1)	30	36	6 (--)	20.00%	--
SES					
Not low-SES (n=56)	22.57	21.32	-1.25 (1.18)	-5.54%	0.293
Low-SES (n=32)	24.53	23.34	-1.19 (1.42)	-4.85%	0.409
Standard ACEs					
0 ACES (n=20)	21	21.65	.65 (1.90)	3.10%	0.737
1-3 ACEs (n=34)	22.29	24.38	2.09 (1.82)	9.38%	0.258
4-10 ACEs (n=33)	25.76	19.70	-6.06 (1.62)	-23.52%	<.001***
No Answer (n=1)	21	29	8 (--)	38.10%	--
Expanded ACEs					
0 ACEs (n=7)	20.71	24.71	4 (2.45)	19.31%	0.154
1-3 ACEs (n=33)	21.85	23.67	1.82 (1.57)	8.33%	0.256
4-7 ACEs (n=27)	22.11	21.63	-.48 (2.05)	-2.17%	0.817
8-14 ACEs (n=20)	28.25	18.7	-9.55 (1.88)	-33.81%	<.001***
No answer (n=1)	21	29	8 (--)	38.10%	--
Readiness for Change					
Precontemplation Stage (n=21)	21.81	22.57	.76 (1.95)	3.48%	0.700
Contemplation Stage (n=55)	23.13	21.56	-1.56 (1.06)	-6.74%	0.144
Preparation Stage (n=9)	28.33	20.67	-7.67 (2.37)	-27.07%	<0.05*
No answer (n=3)	21.33	31.67	10.33 (4.18)	48.43%	0.132

5) Emotion Regulation – Expression Suppression

Outcome (n)	**Pre Mean**	**Post Mean**	**Effect Size (SE)**	**% Change from Pre-survey Mean**	**p-value**
Expression Suppression (n=86)	**4.10**	**3.76**	**-.34 (.15)**	**-8.29%**	**<.05***
School					
Cleveland (n=37)	3.74	3.44	-.30 (.21)	-8.02%	0.158
Lincoln (n=26)	4.41	4.10	-.32 (.27)	-7.26%	0.248
Madison (n=23)	4.32	3.90	-.42 (.32)	-9.72%	0.199
Grade					
10th (n=17)	4.01	3.43	-.59 (.27)	-14.71%	<.05*
11th (n=37)	4.01	3.82	-.19 (.24)	-4.74%	0.434
12th (n=32)	4.24	3.87	-.38 (.24)	-8.96%	0.132
Class Dose					
1 time (n=75)	4.10	3.73	-.37 (.16)	-9.02%	<.05*
2+ times (n=11)	4.07	3.95	-.11 (.32)	-2.70%	0.726
Gender					
Female (n=46)	3.95	3.53	-.42 (.20)	-10.63%	<.05*
Male (n=33)	4.36	4.12	-.23 (.23)	-5.28%	0.318
Non-binary (n=7)	3.86	3.61	-.25 (.57)	-6.48%	0.675
Sexual Orientation					
Heterosexual (n=58)	3.98	3.79	-.19 (.17)	-4.77%	0.275
LGBTQ+ (n=28)	4.35	3.71	-.64 (.27)	-14.71%	<.05*
Race/Ethnicity					
White (n=53)	4.03	3.61	-.42 (.16)	-10.42%	<.05*
Asian (n=6)	4.21	4.17	-.04 (.81)	-0.95%	0.961
Black (n=5)	3.8	3.2	-.6 (.86)	-15.79%	0.524
Latino (n=4)	4.75	4.06	-.69 (.98)	-14.53%	0.532
Multiracial (n=17)	4.22	4.32	.11 (.30)	2.61%	0.721
No answer (n=1)	4	1.5	-2.5 (--)	-62.50%	--
Nativity					
US-born (n=72)	4.02	3.68	-.35 (.03)	-8.71%	<.05*
Non-US-born (n=13)	4.42	3.98	-.44 (.46)	-9.95%	0.354
No answer (n=1)	5.25	7	1.75 (--)	33.33%	--
SES					
Not low-SES (n=56)	3.92	3.57	-.34 (.17)	-8.67%	<.05*
Low-SES (n=30)	4.44	4.12	-.32 (.28)	-7.21%	0.260
Standard ACEs					
0 ACES (n=20)	3.34	3.33	-.01 (.30)	-0.30%	0.967
1-3 ACEs (n=35)	4.22	3.71	-.51 (.26)	-12.09%	0.052
4-10 ACEs (n=30)	4.43	4.11	-.32 (.21)	-7.22%	0.136
No Answer (n=1)	5	4	-1 (--)	-20.00%	--
Expanded ACEs					
0 ACEs (n=6)	2.92	2.67	-.25 (.65)	-8.56%	0.716
1-3 ACEs (n=33)	3.77	3.56	-.21 (.23)	-5.57%	0.362
4-7 ACEs (n=29)	4.30	4.03	-.28 (.27)	-6.51%	0.316
8-14 ACEs (n=17)	4.75	4.07	-.67 (.30)	-14.11%	<.05*
No answer (n=1)	5	4	1 (--)	20.00%	--
Readiness for Change					
Precontemplation Stage (n=21)	4.08	4.08	0 (.37)	0.00%	1.00
Contemplation Stage (n=54)	4.05	3.72	-.32 (.17)	-7.90%	0.056
Preparation Stage (n=9)	4.19	3.06	-1.14 (.31)	-27.71%	<.01**
No answer (n=2)	5.08	4.63	-.46 (.21)	-9.06%	0.272

6) Emotion Regulation – Cognitive Reappraisal

Outcome (n)	**Pre Mean**	**Post Mean**	**Effect Size (SE)**	**% Change from Pre-survey Mean**	**p-value**
Cognitive Reappraisal (n=88)	**4.26**	**4.48**	**.23 (.16)**	**5.40%**	**0.168**
School					
Cleveland (n=37)	4.64	4.74	.10 (.17)	2.16%	0.555
Lincoln (n=27)	3.98	4.06	.07 (.35)	1.76%	0.836
Madison (n=24)	3.99	4.58	.58 (.35)	14.54%	0.113
Grade					
10th (n=18)	4.53	4.79	.26 (.41)	5.74%	0.536
11th (n=38)	3.90	4.38	.47 (.25)	12.05%	0.074
12th (n=32)	4.53	4.44	-.09 (.23)	-1.99%	0.705
Class Dose					
1 time (n=77)	4.32	4.50	.18 (.18)	4.17%	0.317
2+ times (n=11)	3.80	4.36	.56 (.40)	14.74%	0.194
Gender					
Female (n=48)	4.26	4.49	.23 (.26)	5.40%	0.377
Male (n=33)	4.5	4.57	.07 (.20)	1.56%	0.746
Non-binary (n=7)	3.12	4.07	.95 (.33)	30.45%	<.05*
Sexual Orientation					
Heterosexual (n=60)	4.26	4.62	.36 (.20)	8.45%	0.074
LGBTQ+ (n=28)	4.26	4.19	-.07 (.27)	-1.64%	0.815
Race/Ethnicity					
White (n=54)	4.19	4.40	.20 (.21)	4.77%	0.336
Asian (n=6)	4.25	4.69	.44 (.47)	10.35%	0.389
Black (n=5)	4.5	4.13	-.37 (.73)	-8.22%	0.643
Latino (n=5)	3.23	4.5	1.27 (1.33)	39.32%	0.395
Multiracial (n=17)	4.56	4.76	.21 (.23)	4.61%	0.392
No answer (n=1)	6.67	5	-1.67 (--)	-25.04%	--
Nativity					
US-born (n=73)	4.25	4.43	.18 (.16)	4.24%	0.264
Non-US-born (n=14)	4.35	4.86	.51 (.56)	11.72%	0.377
No answer (n=1)	3.67	2.83	-.83 (--)	-22.62%	--
SES					
Not low-SES (n=56)	4.41	4.54	.13 (.17)	2.95%	0.477
Low-SES (n=32)	4.00	4.39	.40 (.33)	10.00%	0.228
Standard ACEs					
0 ACES (n=20)	4.48	4.49	.02 (.23)	0.45%	0.944
1-3 ACEs (n=35)	4.4	4.21	-.19 (.29)	-4.32%	0.514
4-10 ACEs (n=32)	3.97	4.78	.81 (.32)	20.40%	<.05*
No Answer (n=1)	4.17	4.5	.33 (--)	7.91%	--
Expanded ACEs					
0 ACEs (n=6)	4.69	4.61	-.08 (.57)	-1.71%	0.890
1-3 ACEs (n=33)	4.33	4.43	.10 (.21)	2.31%	0.653
4-7 ACEs (n=29)	4.42	4.27	-.15 (.35)	-3.39%	0.670
8-14 ACEs (n=19)	3.75	4.87	1.11 (.43)	29.60%	<.05*
No answer (n=1)	4.17	4.5	.33 (--)	7.91%	--
Readiness for Change					
Precontemplation Stage (n=22)	4.42	4.52	.10 (.80)	2.26%	0.800
Contemplation Stage (n=55)	4.25	4.50	.25 (.19)	5.88%	0.197
Preparation Stage (n=9)	4.28	4.52	.24 (.58)	5.61%	0.688
No answer (n=2)	2.5	3.42	.92 (.25)	36.80%	0.170

7) Coping—Approach

Outcome (n)	**Pre Mean**	**Post Mean**	**Effect Size (SE)**	**% Change from Pre-survey Mean**	**p-value**
Cope—Approach (n=87)	**27.63**	**31.01**	**3.38 (.97)**	**12.23%**	**<.001*** **
School					
Cleveland (n=38)	28.95	31.74	2.79 (1.26)	9.64%	0.080
Lincoln (n=28)	26.24	29.32	2.68 (1.56)	10.21%	0.098
Madison (n=21)	26.57	31.95	5.38 (2.00)	20.25%	<.05*
Grade					
10th (n=19)	28	30.74	2.74 (2.24)	9.79%	0.238
11th (n=36)	26.56	30.75	4.19 (1.34)	15.78%	<.01**
12th (n=32)	28.63	31.47	2.84 (1.73)	9.92%	0.112
Class Dose					
1 time (n=76)	27.95	31.24	3.29 (1.02)	11.77%	<.01**
2+ times (n=11)	25.45	29.45	4 (3.11)	9.92%	0.228
Gender					
Female (n=46)	27.24	32.39	5.15 (1.31)	18.91%	<.001***
Male (n=33)	27.63	29.67	2.03 (1.47)	7.35%	0.175
Non-binary (n=8)	29.86	28.63	-1.25 (3.80)	4.19%	0.752
Sexual Orientation					
Heterosexual (n=60)	27.07	31.1	4.03 (1.27)	14.89%	<.01**
LGBTQ+ (n=27)	28.89	30.81	1.93 (1.30)	6.68%	0.150
Race/Ethnicity					
White (n=53)	28.17	31.92	3.75 (1.23)	13.31%	<.01**
Asian (n=7)	25.43	31.43	6 (3.18)	23.59%	0.109
Black (n=5)	29.4	27	-2.4 (5.10)	-8.16%	0.663
Latino (n=5)	21.4	28.8	7.4 (5.91)	34.58%	0.279
Multiracial (n=16)	27.13	29.94	1.81 (1.84)	6.67%	0.341
No answer (n=1)	45	44	1 (--)	2.22%	--
Nativity					
US-born (n=71)	27.61	30.97	3.37 (1.06)	12.21%	<.01**
Non-US-born (n=15)	28.67	32.07	3.4 (2.57)	11.86%	0.207
No answer (n=1)	14	18	1 (--)	7.14%	--
SES					
Not low-SES (n=56)	28.16	31.30	3.14 (1.16)	11.15%	<.01**
Low-SES (n=31)	26.68	30.48	3.81 (1.75)	14.28%	<.05*
Standard ACEs					
0 ACES (n=20)	30.55	30.7	.15 (2.24)	0.49%	0.947
1-3 ACEs (n=34)	27.35	30.76	3.41 (1.59)	12.47%	<.05*
4-10 ACEs (n=32)	25.88	31.06	5.19 (1.54)	20.05%	<.01**
No Answer (n=1)	35	44	9 (--)	25.71%	--
Expanded ACEs					
0 ACEs (n=6)	33.83	34.33	.5 (5.81)	1.48%	0.935
1-3 ACEs (n=29)	28.28	30.41	2.14 (1.53)	7.57%	0.174
4-7 ACEs (n=28)	26.68	30.96	4.29 (1.85)	16.08%	<.05*
8-14 ACEs (n=23)	26.04	30.39	4.35 (1.87)	16.71%	<.05*
No answer (n=1)	35	44	9 (--)	25.71%	--
Readiness for Change					
Precontemplation Stage (n=21)	25.48	27.38	1.90 (1.73)	7.46%	0.285
Contemplation Stage (n=55)	27.96	31.93	3.96 (1.34)	14.16%	<.01**
Preparation Stage (n=9)	31.89	36.11	4.22 (2.01)	13.23%	0.068
No answer (n=2)	22	21	-1 (2)	-4.55%	0.705

8) Anxiety

Outcome (n)	**Pre Mean**	**Post Mean**	**Effect Size (SE)**	**% Change from Pre-survey Mean**	**p-value**
Anxiety (n=89)	**1.47**	**1.27**	**-.20 (.09)**	**-13.61%**	**<.05***
School					
Cleveland (n=37)	1.27	1.24	-.03 (.10)	-2.36%	0.778
Lincoln (n=28)	1.63	1.43	-.20 (.17)	-12.27%	0.240
Madison (n=24)	1.60	1.13	-.48 (.19)	-30.00%	<.05*
Grade					
10th (n=19)	1.45	1.18	-.27 (.14)	-18.62%	0.076
11th (n=37)	1.26	1.38	-.13 (.13)	-10.32%	0.337
12th (n=33)	1.60	1.34	-.26 (.16)	-16.25%	0.114
Class Dose					
1 time (n=78)	1.50	1.28	-.22 (.09)	-14.67%	<.05*
2+ times (n=11)	1.30	1.19	.10 (.24)	7.69%	0.672
Gender					
Female (n=48)	1.69	1.39	-.30 (.11)	-17.75%	<.01**
Male (n=33)	1.02	1.06	.03 (.14)	2.94%	0.805
Non-binary (n=8)	2.17	1.45	-.71 (.37)	-32.72%	0.111
Sexual Orientation					
Heterosexual (n=60)	1.27	1.18	-.10 (.10)	-7.87%	0.317
LGBTQ+ (n=29)	1.89	1.46	-.42 (.16)	-22.22%	<.05*
Race/Ethnicity					
White (n=53)	1.48	1.24	-.24 (.12)	-16.22%	<.05*
Asian (n=7)	1.41	1.59	.18 (.20)	12.77%	.397
Black (n=5)	1.37	1.11	-.26 (.32)	-18.98%	0.468
Latino (n=5)	1.43	1.23	-.2 (.46)	-13.99%	0.683
Multiracial (n=18)	1.46	1.30	-.16 (.17)	-10.96%	0.362
No answer (n=1)	2.43	1	-1.43 (--)	-58.85%	--
Nativity					
US-born (n=73)	1.38	1.20	-.18 (.09)	-13.04%	<.05*
Non-US-born (n=15)	1.91	1.51	-.4 (.24)	-20.94%	0.118
No answer (n=1)	2	3	1 (--)	50.00%	--
SES					
Not low-SES (n=55)	1.34	1.17	-.17 (.11)	-12.69%	0.134
Low-SES (n=34)	1.69	1.43	-.27 (.14)	-15.98%	0.059
Standard ACEs					
0 ACEs (n=20)	1.14	1	-.14 (.23)	-12.28%	0.546
1-3 ACEs (n=34)	1.36	1.47	.11 (.21)	8.09%	0.604
4-10 ACEs (n=34)	1.80	1.18	-.62 (.19)	-34.44%	<.01**
No Answer (n=1)	1	3	2 (--)	200.00%	--
Expanded ACEs					
0 ACEs (n=6)	1.21	1.29	.07 (.24)	5.79%	0.782
1-3 ACEs (n=33)	1.12	1.10	-.02 (.20)	-1.79%	0.932
4-7 ACEs (n=30)	1.46	1.51	.05 (.20)	3.42%	0.815
8-14 ACEs (n=19)	2.22	1.09	-1.13 (.25)	-50.90%	<.001***
No answer (n=1)	1	3	2 (--)	200.00%	--
Readiness for Change					
Precontemplation Stage (n=22)	1.22	1.35	.12 (.22)	9.84%	0.572
Contemplation Stage (n=55)	1.42	1.15	-.27 (.08)	-19.01%	<.01**
Preparation Stage (n=9)	2.24	1.52	-.71 (.37)	-31.70%	0.090
No answer (n=3)	1.97	2.10	.13 (.37)	6.60%	0.764

9) Depression Index

Outcome (n)	**Pre Mean**	**Post Mean**	**Effect Size (SE)**	**% Change from Pre-survey Mean**	**p-value**
Depression (n=89)	**6.79**	**6.31**	**-.47 (.30)**	**-6.92%**	**0.118**
School					
Cleveland (n=37)	6.49	5.84	-.65 (.55)	-10.02%	0.242
Lincoln (n=28)	7.04	7.11	.07 (.48)	0.99%	0.883
Madison (n=24)	6.96	6.13	-.83 (.46)	-11.93%	0.083
Grade					
10th (n=19)	7.84	6	-1.84 (.56)	-23.47%	<.05*
11th (n=39)	6.15	6.17	.03 (.33)	0.49%	0.938
12th (n=31)	6.94	6.68	-.26 (.64)	-3.75%	0.692
Class Dose					
1 time (n=78)	6.82	6.49	-.33 (.32)	-4.84%	0.308
2+ times (n=11)	6.55	5.09	-1.45 (.71)	-12.14%	0.066
Gender					
Female (n=49)	7.16	6.27	-.90 (.33)	-12.57%	<.01**
Male (n=33)	5.81	6.12	.30 (.62)	5.16%	0.626
Non-binary (n=7)	8.71	7.57	-1.14 (.51)	-13.09%	0.066
Sexual Orientation					
Heterosexual (n=60)	6.15	6.08	-.07 (.36)	-1.14%	0.853
LGBTQ+ (n=29)	8.10	6.79	-1.31 (.52)	-16.17%	<.05*
Race/Ethnicity					
White (n=53)	6.73	6.06	-.68 (.37)	-10.10%	0.074
Asian (n=7)	7.14	7	-.14 (1.64)	-1.96%	0.933
Black (n=5)	5.6	7	1.4 (1.08)	25.00%	0.264
Latino (n=5)	8	6.4	-1.6 (1.29)	-20.00%	0.282
Multiracial (n=18)	6.67	6.67	0 (.59)	0.00%	1.00
No answer (n=1)	9	5	-4 (--)	--	--
Nativity					
US-born (n=73)	6.64	6.18	-.47 (.32)	-7.08%	0.156
Non-US-born (n=15)	7.2	6.73	-.47 (.83)	-6.53%	0.584
No answer (n=1)	11	10	-1 (--)	-9.09%	--
SES					
Not low-SES (n=56)	6.46	6.07	-.39 (.36)	-6.04%	0.285
Low-SES (n=33)	7.33	6.73	-.61 (.53)	-8.32%	0.258
Standard ACEs					
0 ACES (n=20)	7.8	7.35	-.45 (.61)	-5.77%	0.469
1-3 ACEs (n=35)	8.26	7.77	-.49 (.59)	-5.93%	0.420
4-10 ACEs (n=33)	9.12	8.64	-.48 (.66)	-5.26%	0.471
No Answer (n=1)	10	3	-7 (--)	-70.00%	--
Expanded ACEs					
0 ACEs (n=6)	9.33	7	-2.33 (.80)	-24.97%	<.05*
1-3 ACEs (n=33)	7.64	7.48	-.15 (.47)	-1.96%	0.749
4-7 ACEs (n=31)	8.52	8.32	-.19 (.73)	-2.23%	0.792
8-14 ACEs (n=18)	9.67	8.72	-.94 (.91)	-9.72%	0.315
No answer (n=1)	10	3	-7 (--)	-70.00%	--
Readiness for Change					
Precontemplation Stage (n=22)	6.73	6.64	-.09 (.66)	-1.34%	0.892
Contemplation Stage (n=55)	6.6	6.15	-.45 (.35)	-6.82%	0.200
Preparation Stage (n=9)	7.44	6	-1.44 (1.24)	-19.35%	0.277
No answer (n=3)	8.67	8	-.67 (1.45)	-7.73%	0.691

10) Self-harm (One of six Depression Index questions: "I am so unhappy, I think of Harming myself.")

Outcome (n)	**Pre Mean**	**Post Mean**	**Effect Size (SE)**	**% Change from Pre-survey Mean**	**p-value**
Self-harm (n=82)	**.51**	**.46**	**-.05 (.10)**	**-9.80%**	**0.614**
School					
Cleveland (n=35)	.4	.26	-.14 (.14)	-35.00%	0.324
Lincoln (n=25)	.52	.64	.12 (.19)	23.08%	0.543
Madison (n=22)	.68	.59	-.09 (.17)	-13.24%	0.605
Grade					
10th (n=19)	.79	.42	-.37 (.21)	-46.84%	0.090
11th (n=37)	.46	.41	-.05 (.12)	-10.87%	0.661
12th (n=26)	.38	.58	.19 (.19)	50.00%	0.327
Class Dose					
1 time (n=72)	.56	.51	-.04 (.11)	-7.14%	0.704
2+ times (n=10)	.2	.1	-.1 (.1)	-50.00%	0.343
Gender					
Female (n=44)	.48	.45	-.02 (.11)	-4.17%	0.830
Male (n=32)	.41	.41	0 (.19)	0.00%	1.00
Non-binary (n=6)	1.33	.83	-.5 (.34)	-37.59%	0.203
Sexual Orientation					
Heterosexual (n=57)	.23	.39	.16 (.11)	69.57%	0.162
LGBTQ+ (n=25)	1.16	.64	-.52 (.15)	-44.83%	<.01**
Race/Ethnicity					
White (n=48)	.54	.31	-.23 (.11)	-42.59%	<.05*
Asian (n=7)	.71	.86	.14 (.51)	19.72%	0.79
Black (n=5)	.4	1	.6 (.68)	150.00%	0.426
Latino (n=4)	.75	.75	0 (0)	0.00%	--
Multiracial (n=18)	.33	.5	.17 (.17)	51.52%	0.331
No answer (n=0)	--	--	--	--	--
Nativity					
US-born (n=67)	.40	.36	-.04 (.10)	-10.00%	0.658
Non-US-born (n=14)	.86	.79	-.07 (.30)	-8.14%	0.819
No answer (n=1)	3	3	0 (--)	0.00%	--
SES					
Not low-SES (n=52)	.44	.40	-.04 (.11)	-9.09%	0.735
Low-SES (n=30)	.63	.57	-.07 (.18)	-11.11%	0.712
Standard ACEs					
0 ACES (n=20)	.25	.15	-.1 (.07)	-40.00%	0.163
1-3 ACEs (n=32)	.56	.47	-.09 (.16)	-16.07%	0.572
4-10 ACEs (n=29)	.66	.69	.03 (.20)	4.55%	0.865
No Answer (n=1)	1	1	0 (--)	0.00%	--
Expanded ACEs					
0 ACEs (n=6)	.5	.33	-.17 (.17)	-34.00%	0.363
1-3 ACEs (n=32)	.34	.22	-.13 (.17)	-38.24%	0.292
4-7 ACEs (n=28)	.64	.57	-.07 (.18)	-10.94%	0.702
8-14 ACEs (n=15)	.67	.87	.2 (.31)	29.85%	0.531
No answer (n=1)	1	1	0 (--)	0.00%	--
Readiness for Change					
Precontemplation Stage (n=21)	.81	.76	-.05 (.21)	-6.17%	0.825
Contemplation Stage (n=53)	.36	.32	-.04 (.11)	-11.11%	0.742
Preparation Stage (n=5)	.4	.2	-.2 (.2)	-50.00%	0.374
No answer (n=3)	1.33	1.33	0 (1)	0.00%	1.00

11) Social Competence

Outcome (n)	**Pre Mean**	**Post Mean**	**Effect Size (SE)**	**% Change from Pre-survey Mean**	**p-value**
Social Competence (n=87)	**24.20**	**24.03**	**-.17 (.55)**	**-0.70%**	**0.755**
School					
Cleveland (n=37)	25.16	24.70	.46 (.83)	1.83%	0.582
Lincoln (n=27)	23.56	24.30	-.74 (.87)	-3.14%	0.401
Madison (n=23)	23.30	22.78	-.52 (1.26)	-2.23%	0.683
Grade					
10th (n=19)	23.42	24.84	1.42 (1.13)	6.06%	0.225
11th (n=37)	23.30	22.92	-.38 (.94)	-1.63%	0.690
12th (n=31)	25.77	24.87	-.90 (.79)	-3.49%	0.264
Class Dose					
1 time (n=76)	24.14	23.87	-.28 (.59)	-1.16%	0.638
2+ times (n=11)	24.64	2518	.55 (1.68)	2.23%	0.752
Gender					
Female (n=48)	24.42	24.69	.27 (.64)	1.11%	0.675
Male (n=32)	24.19	23.72	-.47 (1.09)	-1.94%	0.670
Non-binary (n=7)	22.86	21	-1.86 (1.81)	-8.14%	0.343
Sexual Orientation					
Heterosexual (n=58)	24.24	24.40	.16 (.70)	0.66%	0.826
LGBTQ+ (n=29)	24.14	23.31	-.83 (.88)	-3.44%	0.355
Race/Ethnicity					
White (n=54)	24.70	24.69	-.02 (.62)	-0.08%	0.976
Asian (n=7)	22.86	23.43	.57 (.81)	2.49%	0.508
Black (n=3)	27.67	25.67	-2 (2)	-7.23%	0.423
Latino (n=5)	20	22	2 (4.16)	10.00%	0.656
Multiracial (n=17)	23.59	22.59	-1 (1.62)	-4.24%	0.545
No answer (n=1)	28	23	-5 (--)	-17.86%	--
Nativity					
US-born (n=72)	24.22	24.17	-.06 (.63)	-0.25%	0.930
Non-US-born (n=14)	24.43	24	-.43 (1.15)	-1.76%	0.716
No answer (n=1)	20	15	-5 (--)	-25.00%	--
SES					
Not low-SES (n=56)	24.84	24.38	-.46 (.66)	-1.85%	0.486
Low-SES (n=31)	23.06	23.42	.35 (.99)	1.52%	0.722
Standard ACEs					
0 ACES (n=20)	24.85	24.65	-.2 (.69)	-0.80%	0.774
1-3 ACEs (n=34)	24.15	23.91	-.24 (.90)	-0.99%	0.795
4-10 ACEs (n=32)	23.88	23.81	-.06 (1.09)	-0.25%	0.955
No answer (n=1)	24	23	-1 (--)	-4.17%	--
Expanded ACEs					
0 ACEs (n=6)	26.83	26.33	-.5 (1.96)	-1.86%	0.809
1-3 ACEs (n=33)	24.58	24.45	-.12 (.61)	-0.49%	0.844
4-7 ACEs (n=30)	23.5	23.4	-.1 (1.25)	-0.43%	0.937
8-14 ACEs (n=17)	23.82	23.59	-.24 (1.20)	-1.01%	0.847
No answer (n=1)	24	23	-1 (--)	-4.17%	--
Readiness for Change					
Precontemplation Stage (n=21)	22.62	23.38	.76 (1.53)	3.36%	0.623
Contemplation Stage (n=55)	24.31	24.15	-.16 (.56)	-0.66%	0.773
Preparation Stage (n=9)	27.11	25.22	-1.89 (1.97)	-6.97%	0.365
No answer (n=2)	25	22.5	-2.5 (2.5)	-10.00%	0.500

12) Connectedness

Outcome (n)	**Pre Mean**	**Post Mean**	**Effect Size (SE)**	**% Change from Pre-survey Mean**	**p-value**
Connectedness (n=87)	**32.23**	**32.03**	**-.20 (1.44)**	**-0.62%**	**0.892**
School					
Cleveland (n=37)	33.24	34.78	1.54 (2.36)	4.635	0.519
Lincoln (n=27)	32.41	28.11	-4.30 (2.90)	-13.27%	0.151
Madison (n=23)	30.39	32.33	1.83 (1.72)	6.02%	0.300
Grade					
10th (n=19)	36.63	35.16	-1.47 (3.34)	-4.01%	0.664
11th (n=37)	30.78	32.41	1.62 (2.25)	5.36%	0.476
12th (n=31)	31.26	29.68	-1.58 (2.26)	-5.05%	0.489
Class Dose					
1 time (n=76)	31.87	32.01	.14 (1.48)	0.44%	0.922
2+ times (n=11)	34.73	32.18	-2.55 (5.22)	-7.34%	0.636
Gender					
Female (n=48)	31.98	31.85	-.13 (1.99)	-0.41%	0.950
Male (n=32)	32.91	32.72	-.19 (.94)	-0.58%	0.938
Non-binary (n=7)	30.86	30.14	-.71 (4.79)	-2.30%	0.886
Sexual Orientation					
Heterosexual (n=58)	33.62	33.09	-.53 (1.68)	-1.58%	0.752
LGBTQ+ (n=29)	29.44	29.93	.48 (2.75)	1.63%	0.861
Race/Ethnicity					
White (n=54)	32.17	31.78	-.39 (1.95)	-1.21%	0.842
Asian (n=6)	38.67	31.67	-7 (8.16)	-18.10%	0.430
Black (n=4)	22.75	27.75	5 (3.24)	21.98%	0.221
Latino (n=5)	30.6	39.2	8.6 (5.11)	28.10%	0.168
Multiracial (n=17)	33.4	32	-1.35 (2.10)	-4.04%	0.528
No answer (n=1)	24	30	6 (--)	25.00%	--
Nativity					
US-born (n=71)	32.62	33.24	.62 (1.47)	1.90%	0.676
Non-US-born (n=15)	31.27	25.67	-5.6 (4.19)	-17.91%	0.203
No answer (n=1)	19	42	23 (--)	121.05%	--
SES					
Not low-SES (n=56)	33.36	32.54	-.82 (1.80)	-2.46%	0.649
Low-SES (n=31)	30.19	31.13	.94 (2.44)	3.11%	0.704
Standard ACEs					
0 ACES (n=20)	37.25	31.6	-5.65 (2.45)	-15.17%	<.05*
1-3 ACEs (n=34)	30.37	29.11	-1.26 (2.58)	-4.15%	0.630
4-10 ACEs (n=32)	31.61	35.90	4.29 (2.55)	13.57%	0.103
No Answer (n=1)	16	23	7 (--)	43.75%	--
Expanded ACEs					
0 ACEs (n=6)	38	36.67	-1.33 (2.08)	-3.50%	0.549
1-3 ACEs (n=33)	32.94	30.88	-2.06 (2.56)	-6.25%	0.427
4-7 ACEs (n=30)	31.26	29.35	-1.90 (2.85)	-6.08%	0.509
8-14 ACEs (n=17)	31.5	38.44	6.94 (2.80)	22.03%	<.05*
No answer (n=1)	24	23	-1 (--)	-4.17%	--
Readiness for Change					
Precontemplation Stage (n=22)	31.73	28.82	-2.91 (3.24)	-9.17%	0.379
Contemplation Stage (n=54)	31.52	34.46	2.94 (1.51)	9.33%	0.057
Preparation Stage (n=9)	35.89	28.11	-7.77 (4.95)	-21.65%	0.155
No answer (n=2)	40.5	19.5	-21 (12)	-51.85%	0.331

Appendix I: Paired T-test Results

0) Attention → Eliminated this variable because 7/10 items had low factor loadings (<.4).
. ttest pre_attnscore == post_attnscore

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
pre_a~re	91	27.93407	.5365294	5.118164	26.86816	28.99998
post_a~e	91	28.49451	.5678341	5.416792	27.3664	29.62261
diff	91	-.5604396	.6496376	6.197148	-1.851058	.7301789

mean(diff) = mean(pre_attnscore - post_attnscore) t = -0.8627
Ho: mean(diff) = 0 degrees of freedom = 90

Ha: mean(diff) < 0 Ha: mean(diff) != 0 Ha: mean(diff) > 0
Pr(T < t) = 0.1953 Pr(|T| > |t|) = 0.3906 Pr(T > t) = 0.8047

1) Executive Function – Behavior Regulation Index (BRI) subscale
ORIGINAL
. ttest pre_bri == post_bri

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
pre_bri	89	21.98876	.4429952	4.179208	21.1084	22.86912
post_bri	89	21.58427	.4814774	4.542249	20.62743	22.5411
diff	89	.4044944	.4625172	4.363378	-.5146613	1.32365

mean(diff) = mean(pre_bri - post_bri) t = 0.8745
Ho: mean(diff) = 0 degrees of freedom = 88

Ha: mean(diff) < 0 Ha: mean(diff) != 0 Ha: mean(diff) > 0
Pr(T < t) = 0.8079 Pr(|T| > |t|) = 0.3842 Pr(T > t) = 0.1921

REVISED – Removed one item with lowest factor loading; BREIF2 Manual specified that only one item may be removed (or blank) maximum to maintain the integrity of any subscale (e.g., BRI)
. ttest post_bri_rev = pre_bri_rev

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
post_b~v	89	19.42697	.4505381	4.250368	18.53162	20.32232
pre_br~v	89	19.70787	.4276579	4.034517	18.85798	20.55775

```
---------+--------------------------------------------------------------------
    diff |     89   -.2808989    .4402469    4.153281   -1.155797    .5939994
------------------------------------------------------------------------------
     mean(diff) = mean(post_bri_rev - pre_bri_rev)                 t =  -0.6380
 Ho: mean(diff) = 0                           degrees of freedom =       88

 Ha: mean(diff) < 0           Ha: mean(diff) != 0           Ha: mean(diff) > 0
 Pr(T < t) = 0.2625         Pr(|T| > |t|) = 0.5251          Pr(T > t) = 0.7375
```

2) Executive Function – Emotion Regulation Index (ERI) Subscale

```
. ttest post_eri_rev = pre_eri_rev

Paired t test
------------------------------------------------------------------------------
Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
post_e~v |      90    23.54444    .5234003    4.965411    22.50446    24.58443
pre_er~v |      90        24.3    .5361932    5.086775     23.2346     25.3654
---------+--------------------------------------------------------------------
    diff |      90   -.7555556    .5564986    5.279409   -1.861306    .3501953
------------------------------------------------------------------------------
     mean(diff) = mean(post_eri_rev - pre_eri_rev)                 t =  -1.3577
 Ho: mean(diff) = 0                           degrees of freedom =       89

 Ha: mean(diff) < 0           Ha: mean(diff) != 0           Ha: mean(diff) > 0
 Pr(T < t) = 0.0890         Pr(|T| > |t|) = 0.1780          Pr(T > t) = 0.9110
```

3) SCS
3A) SCS Overall

```
. ttest post_scs_mean = pre_scs_mean

Paired t test
------------------------------------------------------------------------------
Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
post_s.. |      87    2.972658    .0750752    .7002551    2.823413    3.121902
pre_sc~n |      87    2.668582    .0690431    .6439914    2.531329    2.805836
---------+--------------------------------------------------------------------
    diff |      87    .3040752    .0830785     .774905    .1389206    .4692299
------------------------------------------------------------------------------
     mean(diff) = mean(post_scs_mean - pre_scs_mean)               t =   3.6601
 Ho: mean(diff) = 0                           degrees of freedom =       86

 Ha: mean(diff) < 0           Ha: mean(diff) != 0           Ha: mean(diff) > 0
 Pr(T < t) = 0.9998         Pr(|T| > |t|) = 0.0004          Pr(T > t) = 0.0002
```

3B) Judgement

. ttest post_scs_judge = pre_scs_judge

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
post_s~e	87	3.068966	.1136184	1.059762	2.8431	3.294831
pre_sc~e	87	3.344828	.116848	1.089886	3.112541	3.577114
diff	87	-.2758621	.1330152	1.240683	-.5402875	-.0114366

mean(diff) = mean(post_scs_judge - pre_scs_judge) t = -2.0739
Ho: mean(diff) = 0 degrees of freedom = 86

Ha: mean(diff) < 0 Ha: mean(diff) != 0 Ha: mean(diff) > 0
Pr(T < t) = 0.0205 Pr(|T| > |t|) = 0.0411 Pr(T > t) = 0.9795

4) Emotion Regulation
4A) Cognitive Reappraisal
. ttest post_cog_reapp = pre_cog_reapp

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
post~app	88	4.484848	.1102359	1.034104	4.265743	4.703954
pre_co~p	88	4.25947	.148326	1.391421	3.964656	4.554284
diff	88	.2253788	.1620315	1.51999	-.0966764	.5474339

mean(diff) = mean(post_cog_reapp - pre_cog_reapp) t = 1.3910
Ho: mean(diff) = 0 degrees of freedom = 87

Ha: mean(diff) < 0 Ha: mean(diff) != 0 Ha: mean(diff) > 0
Pr(T < t) = 0.9161 Pr(|T| > |t|) = 0.1678 Pr(T > t) = 0.0839

4B) Expression Suppression
. ttest post_exp_supp = pre_exp_supp

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
post_e~p	88	3.735795	.1421926	1.333885	3.453172	4.018419
pre_ex~p	88	4.004735	.1606665	1.507186	3.685393	4.324077
diff	88	-.2689394	.1513305	1.419606	-.5697252	.0318464

mean(diff) = mean(post_exp_supp - pre_exp_supp) t = -1.7772
Ho: mean(diff) = 0 degrees of freedom = 87

```
 Ha: mean(diff) < 0          Ha: mean(diff) != 0          Ha: mean(diff) > 0
 Pr(T < t) = 0.0395         Pr(|T| > |t|) = 0.0790         Pr(T > t) = 0.9605
```

5) PSS
5A) Standard

```
. ttest post_pss_total = pre_pss_total

Paired t test
------------------------------------------------------------------------------
Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
post_p~l |      88    22.05682    .8249882    7.739075    20.41706    23.69657
pre_ps~l |      88    23.28409    .7457558     6.99581    21.80182    24.76636
---------+--------------------------------------------------------------------
    diff |      88   -1.227273    .9049278    8.488975   -3.025915    .5713692
------------------------------------------------------------------------------
     mean(diff) = mean(post_pss_total - pre_pss_total)           t =  -1.3562
 Ho: mean(diff) = 0                           degrees of freedom =       87

 Ha: mean(diff) < 0          Ha: mean(diff) != 0          Ha: mean(diff) > 0
 Pr(T < t) = 0.0893         Pr(|T| > |t|) = 0.1785         Pr(T > t) = 0.9107
```

5B) Short version

```
. ttest post_pss_short = pre_pss_short

Paired t test
------------------------------------------------------------------------------
Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
post_p~t |      88    8.227273    .3775738    3.541956    7.476804    8.977742
pre_ps~t |      88    8.784091    .3494468    3.278102    8.089528    9.478654
---------+--------------------------------------------------------------------
    diff |      88   -.5568182    .4154972    3.897709   -1.382664    .2690275
------------------------------------------------------------------------------
     mean(diff) = mean(post_pss_short - pre_pss_short)           t =  -1.3401
 Ho: mean(diff) = 0                           degrees of freedom =       87

 Ha: mean(diff) < 0          Ha: mean(diff) != 0          Ha: mean(diff) > 0
 Pr(T < t) = 0.0918         Pr(|T| > |t|) = 0.1837         Pr(T > t) = 0.9082
```

6) Coping
6A) Cope Approach

```
. ttest post_cope_approach = pre_cope_approach

Paired t test
------------------------------------------------------------------------------
Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
```

```
post_c~h |      88    30.96591    .8585194    8.053626    29.25951    32.67231
pre_co~h |      88    27.73864    .7590441    7.120465    26.22995    29.24732
---------+--------------------------------------------------------------------
    diff |      88    3.227273    1.096771    10.28862    1.047321    5.407224
------------------------------------------------------------------------------
     mean(diff) = mean(post_cope_appr~h - pre_cope_appro~h)       t =   2.9425
 Ho: mean(diff) = 0                           degrees of freedom =       87

 Ha: mean(diff) < 0          Ha: mean(diff) != 0          Ha: mean(diff) > 0
 Pr(T < t) = 0.9979         Pr(|T| > |t|) = 0.0042          Pr(T > t) = 0.0021
```

6B) Cope Avoid

```
. ttest post_cope_avoid = pre_cope_avoid

Paired t test
------------------------------------------------------------------------------
Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
post_c~d |      88    24.54545    .6805457    6.384084     23.1928    25.89811
pre_co~d |      88    25.07955    .6258164    5.870678    23.83567    26.32342
---------+--------------------------------------------------------------------
    diff |      88   -.5340909    .9460291    8.874539   -2.414426    1.346244
------------------------------------------------------------------------------
     mean(diff) = mean(post_cope_avoid - pre_cope_avoid)         t =  -0.5646
 Ho: mean(diff) = 0                           degrees of freedom =       87

 Ha: mean(diff) < 0          Ha: mean(diff) != 0          Ha: mean(diff) > 0
 Pr(T < t) = 0.2869         Pr(|T| > |t|) = 0.5738          Pr(T > t) = 0.7131
```

7) Anxiety

```
Paired t test
------------------------------------------------------------------------------
Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
post_a~n |      89    1.269395    .0835334    .7880524     1.10339     1.4354
pre_an~n |      89     1.47405     .088784    .8375869    1.297611     1.65049
---------+--------------------------------------------------------------------
    diff |      89   -.2046549    .0851036    .8028654   -.3737803   -.0355294
------------------------------------------------------------------------------
     mean(diff) = mean(post_anx_mean - pre_anx_mean)             t =  -2.4048
 Ho: mean(diff) = 0                           degrees of freedom =       88

 Ha: mean(diff) < 0          Ha: mean(diff) != 0          Ha: mean(diff) > 0
 Pr(T < t) = 0.0091         Pr(|T| > |t|) = 0.0183          Pr(T > t) = 0.9909
```

8) Depression

ORIGINAL; all 6 items

```
. ttest pre_dep_total = post_dep_total
```

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
pre_de~l	90	8.533333	.3180779	3.017552	7.901319	9.165347
post_d~l	90	7.855556	.3110777	2.951142	7.237451	8.47366
diff	90	.6777778	.3870009	3.671413	-.0911849	1.44674

mean(diff) = mean(pre_dep_total - post_dep_total) t = 1.7514
Ho: mean(diff) = 0 degrees of freedom = 89

Ha: mean(diff) < 0 Ha: mean(diff) != 0 Ha: mean(diff) > 0
Pr(T < t) = 0.9583 Pr(|T| > |t|) = 0.0833 Pr(T > t) = 0.0417

ONLY 5 ITEMS; removed 1 due to low factor loading
. ttest pre_dep_totalrev = post_dep_totalrev

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
pre_de~v	90	6.811111	.2605547	2.471839	6.293394	7.328828
post_d~v	90	6.244444	.2479938	2.352675	5.751686	6.737203
diff	90	.5666667	.3104706	2.945383	-.0502319	1.183565

mean(diff) = mean(pre_dep_totalrev - post_dep_total~v) t = 1.8252
Ho: mean(diff) = 0 degrees of freedom = 89

Ha: mean(diff) < 0 Ha: mean(diff) != 0 Ha: mean(diff) > 0
Pr(T < t) = 0.9643 Pr(|T| > |t|) = 0.0713 Pr(T > t) = 0.0357

8) Social Competence
ORIGINAL
. ttest post_soccomp_mean = pre_soccomp_mean

Paired t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
post_s..	90	2.929718	.0608906	.5776586	2.80873	3.050706
pre_so~n	90	2.952469	.0570192	.5409318	2.839173	3.065765
diff	90	-.0227513	.067139	.6369366	-.1561551	.1106525

mean(diff) = mean(post_soccomp_m~n - pre_soccomp_mean) t = -0.3389
Ho: mean(diff) = 0 degrees of freedom = 89

Ha: mean(diff) < 0 Ha: mean(diff) != 0 Ha: mean(diff) > 0

Pr(T < t) = 0.3678 Pr(|T| > |t|) = 0.7355 Pr(T > t) = 0.6322

REVISED

9) Connectedness

```
. ttest post_connect_sum = pre_connect_sum

Paired t test
------------------------------------------------------------------------------
Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
po~t_sum |      87    32.03448    1.189755     11.0973    29.66933    34.39964
pre_co~m |      87    32.22989    1.106553    10.32124    30.03013    34.42964
---------+--------------------------------------------------------------------
    diff |      87   -.1954023    1.439954    13.43099   -3.057936    2.667131
------------------------------------------------------------------------------
     mean(diff) = mean(post_connect_sum - pre_connect_sum)        t =  -0.1357
 Ho: mean(diff) = 0                           degrees of freedom =       86

 Ha: mean(diff) < 0          Ha: mean(diff) != 0          Ha: mean(diff) > 0
 Pr(T < t) = 0.4462         Pr(|T| > |t|) = 0.8924         Pr(T > t) = 0.5538
```

10) Compassion for Others

ORIGINAL

```
. ttest post_cfo_mean = pre_cfo_mean

Paired t test
------------------------------------------------------------------------------
Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
post_c.. |      84    15.99405    .2703361    2.477671    15.45636    16.53174
pre_cf~n |      84    15.92857    .2354365    2.157811     15.4603    16.39685
---------+--------------------------------------------------------------------
    diff |      84    .0654762    .2573429    2.358587   -.4463685    .5773208
------------------------------------------------------------------------------
     mean(diff) = mean(post_cfo_mean - pre_cfo_mean)              t =   0.2544
 Ho: mean(diff) = 0                           degrees of freedom =       83

 Ha: mean(diff) < 0          Ha: mean(diff) != 0          Ha: mean(diff) > 0
 Pr(T < t) = 0.6001         Pr(|T| > |t|) = 0.7998         Pr(T > t) = 0.3999
```

KINDNESS

```
. ttest post_cfo_kindness = pre_cfo_kindness

Paired t test
------------------------------------------------------------------------------
Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
post_~ss |      85    16.62353    .3831085    3.532086    15.86168    17.38538
```

```
pre_cf~s |     85    16.85882    .3245997    2.992661    16.21332    17.50433
---------+--------------------------------------------------------------------
    diff |     85   -.2352941    .4305059    3.969068   -1.091402     .620814
------------------------------------------------------------------------------
     mean(diff) = mean(post_cfo_kindn~s - pre_cfo_kindness)       t =  -0.5466
 Ho: mean(diff) = 0                            degrees of freedom =       84

 Ha: mean(diff) < 0          Ha: mean(diff) != 0          Ha: mean(diff) > 0
 Pr(T < t) = 0.2931         Pr(|T| > |t|) = 0.5861          Pr(T > t) = 0.7069
```

INDIFFERENCE

```
. ttest post_cfo_indiff = pre_cfo_indiff

Paired t test
------------------------------------------------------------------------------
Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
post_~ff |     84    8.630952    .3256926    2.985022    7.983163    9.278742
pre_c~ff |     84    9.035714    .3303567    3.027769    8.378648     9.69278
---------+--------------------------------------------------------------------
    diff |     84   -.4047619    .2987443    2.738037   -.9989523    .1894285
------------------------------------------------------------------------------
     mean(diff) = mean(post_cfo_indiff - pre_cfo_indiff)          t =  -1.3549
 Ho: mean(diff) = 0                            degrees of freedom =       83

 Ha: mean(diff) < 0          Ha: mean(diff) != 0          Ha: mean(diff) > 0
 Pr(T < t) = 0.0896         Pr(|T| > |t|) = 0.1791          Pr(T > t) = 0.9104
```

HUMILITY

```
. ttest post_cfo_hum = pre_cfo_hum

Paired t test
------------------------------------------------------------------------------
Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
po~o_hum |     84    16.58333    .3641289    3.337297     15.8591    17.30757
pre_cf~m |     84    16.85714    .3054031    2.799065    16.24971    17.46458
---------+--------------------------------------------------------------------
    diff |     84   -.2738095    .3562213    3.264822   -.9823194    .4347004
------------------------------------------------------------------------------
     mean(diff) = mean(post_cfo_hum - pre_cfo_hum)                t =  -0.7687
 Ho: mean(diff) = 0                            degrees of freedom =       83

 Ha: mean(diff) < 0          Ha: mean(diff) != 0          Ha: mean(diff) > 0
 Pr(T < t) = 0.2221         Pr(|T| > |t|) = 0.4443          Pr(T > t) = 0.7779
```

SEPARATENESS

```
. ttest post_cfo_hum = pre_cfo_hum

Paired t test
------------------------------------------------------------------------------
```

```
Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
po~o_hum |      84    16.58333    .3641289    3.337297     15.8591    17.30757
pre_cf~m |      84    16.85714    .3054031    2.799065    16.24971    17.46458
---------+--------------------------------------------------------------------
    diff |      84   -.2738095    .3562213    3.264822   -.9823194    .4347004
------------------------------------------------------------------------------
     mean(diff) = mean(post_cfo_hum - pre_cfo_hum)                 t =  -0.7687
 Ho: mean(diff) = 0                              degrees of freedom =       83

 Ha: mean(diff) < 0           Ha: mean(diff) != 0           Ha: mean(diff) > 0
 Pr(T < t) = 0.2221         Pr(|T| > |t|) = 0.4443          Pr(T > t) = 0.7779
```

MINDFULNESS

```
. ttest post_cfo_mindf = pre_cfo_mindf

Paired t test
------------------------------------------------------------------------------
Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
post_c.. |      84    15.78571    .3267003    2.994257    15.13592    16.43551
pre_c~df |      84    16.16667    .2937645    2.692396    15.58238    16.75095
---------+--------------------------------------------------------------------
    diff |      84   -.3809524     .396812    3.636842   -1.170196    .4082907
------------------------------------------------------------------------------
     mean(diff) = mean(post_cfo_mindf - pre_cfo_mindf)             t =  -0.9600
 Ho: mean(diff) = 0                              degrees of freedom =       83

 Ha: mean(diff) < 0           Ha: mean(diff) != 0           Ha: mean(diff) > 0
 Pr(T < t) = 0.1699         Pr(|T| > |t|) = 0.3398          Pr(T > t) = 0.8301
```

DISENGAGED

```
. ttest post_cfo_diseng = pre_cfo_diseng

Paired t test
------------------------------------------------------------------------------
Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
post_c~g |      84    7.785714    .3222801    2.953746    7.144712    8.426716
pre_cf~g |      84     7.97619    .3090601    2.832582    7.361482    8.590899
---------+--------------------------------------------------------------------
    diff |      84   -.1904762    .3246765     2.97571   -.8362448    .4552924
------------------------------------------------------------------------------
     mean(diff) = mean(post_cfo_diseng - pre_cfo_diseng)           t =  -0.5867
 Ho: mean(diff) = 0                              degrees of freedom =       83

 Ha: mean(diff) < 0           Ha: mean(diff) != 0           Ha: mean(diff) > 0
 Pr(T < t) = 0.2795         Pr(|T| > |t|) = 0.5590          Pr(T > t) = 0.7205
```

Bibliography

[1] Ford DE. The community and public well-being model: a new framework and graduate curriculum for addressing adverse childhood experiences. The Health Commons Group. Website: file:///C:/Users/giael/OneDrive/0%20-%20Constellation%20Consulting/Dave%20Ford/Community%20and%20Public%20Well-being%20Model.pdf.
[2] Kabat-Zinn J. Wherever you go there you are: mindfulness meditation in everyday life. New York: Hyperion, 1994.
[3] Smalley SL, Winston D. Fully Present: The Science, Art, and Practice of Mindfulness. Philadephia, PA: Da Capo Press/Perseus Books Group, 2010.
[4] King S. A case study of a yoga and meditation intervention in an urban school: a complex web of relationships and resilience in the search for student well-being. Los Angeles: UCLA Electronic Thesis and Dissertations, 2017.
[5] Center for Disease Control and Prevention (CDC). About the CDC-Kaiser ACE Study. www.cdc.gov/violenceprevention/acestudy/about.html. Accessed Aug. 28-Sept. 6, 2016.
[6] Center for Disease Control and Prevention (CDC). About the CDC-Kaiser ACE Study. www.cdc.gov/violenceprevention/acestudy/about.html. Accessed Aug. 28-Sept. 6, 2016.
[7] Centers for Disease Control and Prevention (CDC MMRW). Morbidity and Mortality Weekly Report (MMWR) – Adverse Childhood Experiences Reported by Adults – Five States, 2009. 2010; 59(49): 1609-1636.
[8] Anda RF, Dong M, Brown DW, Felitti VJ, Giles WH, Perry GS, Edwards VJ, Dube SR. The Relationship of Adverse Childhood Experiences to a History of Premature Death of Family Members. BMC Public Health. 2009; 9: 106.
[9] Thompson R, Flaherty EG, English DJ, Litrownik AJ, Dbowitz H, Kotch JB, Runyan DK. Trajectories of Adverse Childhood Experiences and Self-Reported Health at Age 18. Academy of Pediatrics. 2015; 15(5): 503-509.
[10] Larkin H, Shields JJ, Anda RF. The Health and Social Consequences of Adverse Childhood Experiences (ACE) across the Lifespan: An Introduction to Prevention and Intervention in the Community. Journal of Prevention and Intervention in the Community. 2012; 40(4): 263-270.
[11] Szilagyi M, Halfton N. Pediatric adverse childhood experiences: implications of life course health trajectories. Academic Pediatrics. 2015; 15(5): 467-468.
[12] Ortiz R, Sibinga EM. The role of mindfulness in reducing the adverse effects of childhood stress and trauma. Children. 2017; 4(16): 1-19. Doi: 10.3390/children4030016.
[13] Isumi A, Fujiwara T. Association of adverse childhood experiences with shaking and smothering behaviors among Japanese caregivers. Child Abuse and Neglect. 2016; 57: 12-20.
[14] McEwen, BS. Brain on Stress: How the Social Environment Gets Under the Skin. Proc. National Academy of Science. 2012; 109: 17180-17185.
[15] Van Der Kolk B. The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma. New York: Penguin Random House LLC, 2014. Print.
[16] Perry-Parrish C, Copeland-Linder N, Webb L, Shields AH, Sibinga EM. Improving self-regulation in adolescents: current evidence for the role of mindfulness-based cognitive therapy. Adolescent Health, Medicine, and Therapeutics. 2016; 7: 101-108.
[17] Ebrahiminejad S, Poursharifi H, Bakhshiour Roodsari A, Zeinodini Z, Noorbakhsh S. The effectiveness of mindfulness-based cognitive therapy on Iranian female adolescents suffering from social anxiety. Iranian Red Crescent Medical Journal. 2016; 18(11): e25116. doi: 10.5812/ircmj.25116. eCollection 2016.
[18] Dube SR, Felitti VJ, Dong M, Giles WH, Anda RF. The Impact of Adverse Childhood Experiences on Health Problems: Evidence from Four Birth Cohorts Dating Back to 1900. Preventive Medicine. 2003; 37(3): 268-277.
[19] Dutton MA, Bermudez D, Matas A, Majid H, Myers NL. Mindfulness-based stress reduction for low-income predominantly African American women with PTSD and a history of intimate partner violence. Cognitive Behavioral Practice. 2013; 20(1): 23-32. Citation for first three sentences of paragraph.
[20] Craner JR, Sawchuk CN, Smyth KT. Outcomes of a 6-week cognitive-behavioral and mindfulness group intervention in primary care. Families, Systems, and Health. 2016; 34(3): 250-259.
[21] Stjernsward S, Hansson L. Effectiveness and usability of a web-based mindfulness intervention for families living with mental illness. Mindfulness. 2017; 8: 751-764.
[22] Bogosian A, Chadwick P, Windgassen S, Norton S, McCrone P, Mosweu I, Silber E, Moss-Morris R. Distress improves after mindfulness training for progressive MS: a pilot randomized trial. Multiple Sclerosis Journal. 2015; 21(9): 1184-1194.
[23] Shapiro SL, Carlson LE, Astin JA, Feedman B. Mechanisms of mindfulness. Journal of Clinical Psychology. 2006; 62(3): 373-386.

[24] Blum L, Blum, R. Resilience in Adolescence in DiClemente, R., Santelli, J., Crosby, R. (Eds) Adolescent Health: Understanding and Preventing Risk Behavior. San Francisco: Jossey-Bass, 2009: 51-76.
[25] Perry-Parrish C, Copeland-Linder N, Webb L, Shields AH, Sibinga EM. Improving self-regulation in adolescents: current evidence for the role of mindfulness-based cognitive therapy. Adolescent Health, Medicine, and Therapeutics. 2016; 7: 101-108.
[26] Dube SR, Felitti VJ, Dong M, Giles WH, Anda RF. The Impact of Adverse Childhood Experiences on Health Problems: Evidence from Four Birth Cohorts Dating Back to 1900. Preventive Medicine. 2003; 37(3): 268-77.
[27] Bostic JQ, Nevarez MD, Potter MP, Prince JB, Benningfield MM, Aguirre BA. Being present at school: implementing mindfulness in schools. Child Adolesc Psychiatr Clin N Am. 2015; 24(2): 245-59.
[28] Beutel ME, Tibubos AN, Klein EM, Schmutzer G, Reiner I, Kocalevent RD, Brahler E. Childhood adversities and distress – The role of resilience in a representative sample. PLoS One. 2017; 12(3): e0173826. doi: 10.1371/journal.pone.0173826. eCollection 2017.
[29] Ortiz R, Sibinga EM. The role of mindfulness in reducing the adverse effects of childhood stress and trauma. Children. 2017; 4(16): 1-19. Doi: 10.3390/children4030016.
[30] Bronfenbrenner U, Morris P. The Ecology of Developmental processes in Lerner RM (Ed), Theoretical Models of Human Development. New York: Wiley, 1998: 993-1028.
[31] Bethell C, Gombojav N, Solloway M, Wissow L. Adverse childhood experiences, resilience and mindfulness-based approaches: common denominator issues for children with emotional, mental, or behavioral problems. Child and Adolescent Pyschiatric Clinics of North America. 2016; 25(2): 139-56.
[32] Blum RW, Astone NM, Decker MR, Chandra Mouli V. A conceptual framework for early adolescence: a platform for research. International Journal of Adolescent Medicine and Health. 2014; 26(3): 321-331.
[33] Siegel DJ. Mindsight: The New Science of Personal Transformation. New York: Bantam Books, 2010. Print.
[34] Volanen SM, Lassander M, Hankonen N, Santalahti P, Hintsanen M, Simonsen N, Raevuori A, Mullola S, Vahlberg T, But A, Suominen S. Healthy Learning Mind – a school-based mindfulness relaxation program: a study protocol for a cluster randomized controlled trial. BMC Psychology. 2016; 4(35): 1-10.
[35] Shapiro SL, Carlson LE, Astin JA, Freedman B. Mechanisms of mindfulness. Journal of Clinical Psychology. 2006; 62(3): 373-386.
[36] Peace in Schools. Website: www.peaceinschools.org.
[37] Catalano RF, Fagan AA, Gavin LE, Greenberg MT, Irwin CE, Ross DA, Shek DTL. Worldwide application of prevention science in adolescent health. The Lancet. 2012; 379: 1653-1664.
[38] Fairchild AJ, MacKinnon DP. A general model for testing mediation and moderation effects. Prevention Science. 2009; 10(2): 87-99.
[39] Washington HA. Medical apartheid: the dark history of medical experimentation on Black Americans from colonial times to the present. New York: First Anchor Books, 2006.
[40] DeGruy J. Post Traumatic Slave Syndrome: America's Legacy of Enduring Injury and Healing. Uptone Press, 2005.
[41] Oppression and the Body: Roots, Resistance, and Resolutions. Ed. Roots, Resistance, and Resolutions. Berkeley: North Atlantic Books, 2018.
[42] Unequal treatment: confronting racial and ethnic disparities in healthcare. Ed. Smedley BD, Stith AY, Nelson AR./Board on Health Sciences Policy—Institute of Medicine of the National Academies. Washington, DC: The National Academies Press, 2011.
[43] Mills C. Decolonizing global mental health: the psychiatrization of the majority world. New York: Routledge, 2014.
[44] Salter PS, Adams G. Provisional strategies for decolonizing consciousness.
[45] King S. Mind Heart Consulting. Website: https://mindheartconsulting.com/author/sara-king/.
[46] Falchuk D, Sangeeta Balajee S. The Shape of Trust. Seattle: City of Seattle, 2020.
[47] Sangeeta Balajee. Our Bodhi Project. Website: https://ourbodhiproject.squarespace.com/the-frame.
[48] Consciousness-in-Action: Toward an Integral Psychology of Liberation and Transformation. Caguas, Puerto Rico, ilé Publications, 2007.
[49] Rev. Williams AK, Lama Owens R, Syedullah J. Radical Dharma: Talking race, love, and liberation. Berkeley: North Atlantic Books, 2016.
[50] Oppression and the body: roots, resistance, and resolutions. Ed. Caldwell C, Bennett Leighton L. Berkeley, CA: North Atlantic Books, 2018.
[51] Magee RV. The inner work of racial justice: healing ourselves and transforming our communities through mindfulness. Canada: Tarcher Perigee/Penguin Random House LLC, 2019.

[52] Potapchuk M, MP Associates, Leiderman S/Center for Assessment and Policy Development. Racial Equity Resource Guide (online version). Website: http://www.racialequityresourceguide.org/about/glossary. 2009. Accessed 30 May 2020.
[53] Menakem R. My grandmother's hands: Racialized trauma and the pathway to mending our hearts and bodies. Las Vegas, NV: Central Recovery Press, 2017.
[54] Manakem R. My grandmother's hands: racialized trauma and the pathway to mending our hearts and bodies. Las Vegas: Central Recovery Press, 2017.
[55] Manakem R. My grandmother's hands: racialized trauma and the pathway to mending our hearts and bodies. Las Vegas: Central Recovery Press, 2017.
[56] Board on Health Sciences Policy/Institute of Medicine of the National Academies. Unequal treatment: confronting racial and ethnic disparities in healthcare. Ed. Smedly BD, Stith AY, Nelson AR. Washington, DC: National Academies Press, 2006.
[57] Van Der Kolk B. The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma. New York: Penguin Random House LLC, 2014. Print.
[58] Washington H. Medical Apartheid: the dark history of medical experimentation on lack Americans from colonial times to present. New York: Broadway Books, 2006.
[59] King S. "The Science of Social Justice: a generative field of collective healing." Science and Non-Duality (SAND) Conference. 26 Oct. 2019. Website: https://www.scienceandnonduality.com/event/sand19-us#speakers.
[60] Center for Disease Control and Prevention (CDC). About the CDC-Kaiser ACE Study. www.cdc.gov/violenceprevention/acestudy/about.html. Accessed Aug. 28-Sept. 6, 2016.
[61] Center for Disease Control and Prevention (CDC). About the CDC-Kaiser ACE Study. www.cdc.gov/violenceprevention/acestudy/about.html. Accessed Aug. 28-Sept. 6, 2016.
[62] Center for Disease Control and Prevention (CDC). About the CDC-Kaiser ACE Study. www.cdc.gov/violenceprevention/acestudy/about.html. Accessed Aug. 28-Sept. 6, 2016.
[63] Centers for Disease Control and Prevention (CDC MMRW). Morbidity and Mortality Weekly Report (MMWR) – Adverse Childhood Experiences Reported by Adults – Five States, 2009. 2010; 59(49): 1609-1636.
[64] Anda RF, Dong M, Brown DW, Felitti VJ, Giles WH, Perry GS, Edwards VJ, Dube SR. The Relationship of Adverse Childhood Experiences to a History of Premature Death of Family Members. BMC Public Health. 2009; 9: 106.
[65] Thompson R, Flaherty EG, English DJ, Litrownik AJ, Dbowitz H, Kotch JB, Runyan DK. Trajectories of Adverse Childhood Experiences and Self-Reported Health at Age 18. Academy of Pediatrics. 2015; 15(5): 503-509.
[66] Larkin H, Shields JJ, Anda RF. The Health and Social Consequences of Adverse Childhood Experiences (ACE) across the Lifespan: An Introduction to Prevention and Intervention in the Community. Journal of Prevention and Intervention in the Community. 2012; 40(4): 263-270.
[67] Szilagyi M, Halfton N. Pediatric adverse childhood experiences: implications of life course health trajectories. Academic Pediatrics. 2015; 15(5): 467-468.
[68] Ortiz R, Sibinga EM. The role of mindfulness in reducing the adverse effects of childhood stress and trauma. Children. 2017; 4(16): 1-19. Doi: 10.3390/children4030016.
[69] Isumi A, Fujiwara T. Association of adverse childhood experiences with shaking and smothering behaviors among Japanese caregivers. Child Abuse and Neglect. 2016; 57: 12-20.
[70] McEwen, BS. Brain on Stress: How the Social Environment Gets Under the Skin. Proc. National Academy of Science. 2012; 109: 17180-17185.
[71] Center for Disease Control and Prevention (CDC). About the CDC-Kaiser ACE Study. www.cdc.gov/violenceprevention/acestudy/about.html. Accessed Aug. 28-Sept. 6, 2016.
[72] Centers for Disease Control and Prevention (CDC MMRW). Morbidity and Mortality Weekly Report (MMWR) – Adverse Childhood Experiences Reported by Adults – Five States, 2009. 2010; 59(49): 1609-1636.
[73] Thompson R, Flaherty EG, English DJ, Litrownik AJ, Dbowitz H, Kotch JB, Runyan DK. Trajectories of Adverse Childhood Experiences and Self-Reported Health at Age 18. Academy of Pediatrics. 2015; 15(5): 503-509.
[74] Anda RF, Dong M, Brown DW, Felitti VJ, Giles WH, Perry GS, Edwards VJ, Dube SR. The relationship of adverse childhood experiences to a history of premature death of family members. BMC Public Health. 2009; 9: 106.
[75] SAMHSA. Spotlights on six trauma-informed resilient communities. 16 May 2017. Website: https://newsletter.samhsa.gov/2017/05/16/trauma-informed-communities/.
[76] Van Der Kolk B. The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma. New York: Penguin Random House LLC, 2014. Print.

[77] Centers for Disease Control and Prevention (CDC MMRW). Morbidity and Mortality Weekly Report (MMWR) – Adverse Childhood Experiences Reported by Adults – Five States, 2009. 2010; 59(49): 1609-1636.
[78] Centers for Disease Control and Prevention (CDC MMRW). Morbidity and Mortality Weekly Report (MMWR) – Adverse Childhood Experiences Reported by Adults – Five States, 2009. 2010; 59(49): 1609-1636.
[79] Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz A, Edwards V, Koss MP, Marks JS. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: the Adverse Childhood Experiences (ACE) Study. American Journal of Preventive Medicine. 1998; 14(4): 245-258.
[80] https://www.cdc.gov/violenceprevention/acestudy/about.html
[81] Menakem R. My grandmother's hands: Racialized trauma and the pathway to mending our hearts and bodies. Las Vegas, NV: Central Recovery Press, 2017.
[82] Quiñones Rosado R. Consciousness-in-action: Toward an Integral Psychology of Liberation and Transformation. Caguas, Puerto Rico: ilé Publications, 2007.
[83] Roundtree J, Smith A. Strength-based well-being indicators for indigenous children and families: a literature review of indigenous communities' identified well-being indicators. Centers for American Indian and Alaska Native Health, Colorado School of Public Health/University of Colorado Anschuz Medical Campus. American Indian and Alaska Native Mental Health Research. 2016; 207(23); 206-218.
[84] McGregor DP, Morelli PT. Matsuoka JK, Rodenhurst R. Kong N, Spender MS. An ecological model of Native Hawaiian well-being. Pacific Health Dialog. 2003; 10(2): 106-128.
[85] Quiñones Rosado R. Consciousness-in-Action: Toward an Integral Psychology of Liberation and Transformation. Caguas, Puerto Rico: ilé Publications, 2007.
[86] Menakem R. My grandmother's hands: Racialized trauma and the pathway to mending our hearts and bodies. Las Vegas, NV: Central Recovery Press, 2017.
[87] Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz A, Edwards V, Koss MP, Marks JS. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: the Adverse Childhood Experiences (ACE) Study. American Journal of Preventive Medicine. 1998; 14(4): 245-258.
[88] Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz A, Edwards V, Koss MP, Marks JS. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: the Adverse Childhood Experiences (ACE) Study. American Journal of Preventive Medicine. 1998; 14(4): 245-258.
[89] Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz A, Edwards V, Koss MP, Marks JS. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: the Adverse Childhood Experiences (ACE) Study. American Journal of Preventive Medicine. 1998; 14(4): 245-258.
[90] Center for Disease Control and Prevention (CDC). About the CDC-Kaiser ACE Study. www.cdc.gov/violenceprevention/acestudy/about.html. Accessed Aug. 28-Sept. 6, 2016.
[91] Center for Disease Control and Prevention (CDC). About the CDC-Kaiser ACE Study. www.cdc.gov/violenceprevention/acestudy/about.html. Accessed Aug. 28-Sept. 6, 2016.
[92] Giovanelli A, Reynolds AJ, Mondi CF, Ou S. Adverse childhood experiences and adult well-being in a low-income, urban cohort. Pediatrics. 2016; 137(4): 1-13.
[93] Cronholm PF, Forke CM, Wade R, Bair-Merritt MH, Davis M, Harkins-Schwarz M, Pachter LM, Fein JA. Adverse childhood experiences: expanding the concept of adversity. American Journal of Preventive Medicine. 2015; 49(3): 354-361.
[94] Bethell C, Gombojav N, Solloway M, Wissow L. Adverse childhood experiences, resilience and mindfulness-based approaches: common denominator issues for children with emotional, mental, or behavioral problems. Child and Adolescent Psychiatric Clinics of North America. 2016; 25(2): 139-56.
[95] Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz A, Edwards V, Koss MP, Marks JS. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: the Adverse Childhood Experiences (ACE) Study. American Journal of Preventive Medicine. 1998; 14(4): 245-258.
[96] Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz A, Edwards V, Koss MP, Marks JS. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: the Adverse Childhood Experiences (ACE) Study. American Journal of Preventive Medicine. 1998; 14(4): 245-258.
[97] Bethell C, Gombojav N, Solloway M, Wissow L. Adverse childhood experiences, resilience and mindfulness-based approaches: common denominator issues for children with emotional, mental, or behavioral problems. Child and Adolescent Psychiatric Clinics of North America. 2016; 25(2): 139-56.
[98] CDC website.
[99] Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz A, Edwards V, Koss MP, Marks JS. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: the Adverse Childhood Experiences (ACE) Study. American Journal of Preventive Medicine. 1998; 14(4): 245-258.

[100] Center for Disease Control and Prevention (CDC). About the CDC-Kaiser ACE Study. www.cdc.gov/violenceprevention/acestudy/about.html. Accessed Aug. 28-Sept. 6, 2016.
[101] Giovanelli A, Reynolds AJ, Mondi CF, Ou S. Adverse childhood experiences and adult well-being in a low-income, urban cohort. Pediatrics. 2016; 137(4): 1-13.
[102] Mersky JP, Janczewski CE, Topitzes J. Rethinking the measurement of adversity: moving toward second-generation research on adverse childhood experiences. Child Maltreatment. 2017; 22(1): 58-68.
[103] McKelvey LM, Whiteside-Mansell L, Conners-Burrow NA, Swindle T, Fitzgerald S. Assessing Adverse Experiences from Infancy through Early childhood in Home Visiting Programs. Child Abuse and Neglect. 2015. [Electronically published ahead of print] ac.els-cdn.com.ezp.welch.jhmi.edu/S0145213415003233/1-s2.0-S0145213415003233-main.pdf?_tid=db305050-a797-11e5-adef-00000aab0f27&acdnat=1450670816_1fea001ac83c1eb3be37e169db841801. Accessed De. 2015-Jan 2016.
[104] Bethell C, Gombojav N, Solloway M, Wissow L. Adverse childhood experiences, resilience and mindfulness-based approaches: common denominator issues for children with emotional, mental, or behavioral problems. Child and Adolescent Psychiatric Clinics of North America. 2016; 25(2): 139-56.
[105] Bethell C, Gombojav N, Solloway M, Wissow L. Adverse childhood experiences, resilience and mindfulness-based approaches: common denominator issues for children with emotional, mental, or behavioral problems. Child and Adolescent Psychiatric Clinics of North America. 2016; 25(2): 139-56.
[106] McKelvey LM, Whiteside-Mansell L, Conners-Burrow NA, Swindle T, Fitzgerald S. Assessing Adverse Experiences from Infancy through Early childhood in Home Visiting Programs. Child Abuse and Neglect. 2015. [Electronically published ahead of print] ac.els-cdn.com.ezp.welch.jhmi.edu/S0145213415003233/1-s2.0-S0145213415003233-main.pdf?_tid=db305050-a797-11e5-adef-00000aab0f27&acdnat=1450670816_1fea001ac83c1eb3be37e169db841801. Accessed De. 2015-Jan 2016.
[107] Finkelhor D, Shattuck A, Turner H, Hamby S. Improving the Adverse Childhood Experiences Study Scale. Journal of the American Medical Association Pediatrics. 2013;167(1):70–75
[108] Giovanelli A, Reynolds AJ, Mondi CF, Ou S. Adverse childhood experiences and adult well-being in a low-income, urban cohort. Pediatrics. 2016; 137(4): 1-13.
[109] Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz A, Edwards V, Koss MP, Marks JS. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: the Adverse Childhood Experiences (ACE) Study. American Journal of Preventive Medicine. 1998; 14(4): 245-258.
[110] Bethell C, Gombojav N, Solloway M, Wissow L. Adverse childhood experiences, resilience and mindfulness-based approaches: common denominator issues for children with emotional, mental, or behavioral problems. Child and Adolescent Psychiatric Clinics of North America. 2016; 25(2): 139-56.
[111] Bethell C, Gombojav N, Solloway M, Wissow L. Adverse childhood experiences, resilience and mindfulness-based approaches: common denominator issues for children with emotional, mental, or behavioral problems. Child and Adolescent Psychiatric Clinics of North America. 2016; 25(2): 139-56.
[112] Mersky JP, Janczewski CE, Topitzes J. Rethinking the measurement of adversity: moving toward second-generation research on adverse childhood experiences. Child Maltreatment. 2017; 22(1): 58-68.
[113] Finkelhor D, Shattuck A, Turner H, Hamby S. Improving the Adverse Childhood Experiences Study Scale. Journal of the American Medical Association Pediatrics. 2013;167(1):70–75
[114] Finkelhor D, Shattuck A, Turner H, Hamby S. Improving the Adverse Childhood Experiences Study Scale. Journal of the American Medical Association Pediatrics. 2013;167(1):70–75
[115] Mersky JP, Janczewski CE, Topitzes J. Rethinking the measurement of adversity: moving toward second-generation research on adverse childhood experiences. Child Maltreatment. 2017; 22(1): 58-68.
[116] Mersky JP, Janczewski CE, Topitzes J. Rethinking the measurement of adversity: moving toward second-generation research on adverse childhood experiences. Child Maltreatment. 2017; 22(1): 58-68.
[117] Finkelhor D, Shattuck A, Turner H, Hamby S. Improving the Adverse Childhood Experiences Study Scale. Journal of the American Medical Association Pediatrics. 2013;167(1):70–75
[118] Finkelhor D, Shattuck A, Turner H, Hamby S. Improving the Adverse Childhood Experiences Study Scale. Journal of the American Medical Association Pediatrics. 2013;167(1):70–75
[119] Cronholm PF, Forke CM, Wade R, Bair-Merritt MH, Davis M, Harkins-Schwarz M, Pachter LM, Fein JA. Adverse childhood experiences: expanding the concept of adversity. American Journal of Preventive Medicine. 2015; 49(3): 354-361.
[120] Mersky JP, Janczewski CE, Topitzes J. Rethinking the measurement of adversity: moving toward second-generation research on adverse childhood experiences. Child Maltreatment. 2017; 22(1): 58-68.
[121] Finkelhor D, Shattuck A, Turner H, Hamby S. Improving the Adverse Childhood Experiences Study Scale. Journal of the American Medical Association Pediatrics. 2013;167(1):70–75

[122] Finkelhor D, Shattuck A, Turner H, Hamby S. Improving the Adverse Childhood Experiences Study Scale. Journal of the American Medical Association Pediatrics. 2013;167(1):70–75
[123] Bethell C, Gombojav N, Solloway M, Wissow L. Adverse childhood experiences, resilience and mindfulness-based approaches: common denominator issues for children with emotional, mental, or behavioral problems. Child and Adolescent Psychiatric Clinics of North America. 2016; 25(2): 139-56.
[124] Giovanelli A, Reynolds AJ, Mondi CF, Ou S. Adverse childhood experiences and adult well-being in a low-income, urban cohort. Pediatrics. 2016; 137(4): 1-13.
[125] Giovanelli A, Reynolds AJ, Mondi CF, Ou S. Adverse childhood experiences and adult well-being in a low-income, urban cohort. Pediatrics. 2016; 137(4): 1-13.
[126] Brockie TN, Dana-Sacco G, Wallen GR, Wilcox HC, Campbell JC. The Relationship of Adverse Childhood Experiences to PTSD, Depression, Poly-Drug Use and Suicide Attempt in Reservation-Based Native American Adolescents and Young Adults. American Journal of Community Psychology. 2015; 55(3-4): 411-421.
[127] Hwahng SJ, Nuttbrock L. Adolescent gender-related abuse, androphilia, and HIV risk among transfeminine people of color in New York City. Journal of Homosexuality. 2014; 61(5): 691-713. doi: 10.1080/00918369.2014.870439.
[128] Brockie TN, Dana-Sacco G, Wallen GR, Wilcox HC, Campbell JC. The Relationship of Adverse Childhood Experiences to PTSD, Depression, Poly-Drug Use and Suicide Attempt in Reservation-Based Native American Adolescents and Young Adults. American Journal of Community Psychology. 2015; 55(3-4): 411-421.
[129] Cronholm PF, Forke CM, Wade R, Bair-Merritt MH, Davis M, Harkins-Schwarz M, Pachter LM, Fein JA. Adverse childhood experiences: expanding the concept of adversity. American Journal of Preventive Medicine. 2015; 49(3): 354-361.
[130] Finkelhor D, Shattuck A, Turner H, Hamby S. Improving the Adverse Childhood Experiences Study Scale. Journal of the American Medical Association Pediatrics. 2013;167(1):70–75
[131] Finkelhor D, Shattuck A, Turner H, Hamby S. Improving the Adverse Childhood Experiences Study Scale. Journal of the American Medical Association Pediatrics. 2013;167(1):70–75
[132] https://store.samhsa.gov/shin/content/SMA14-4884/SMA14-4884.pdf
[133] Substance Abuse and Mental Health Services Administration (SAMSHA). Trauma-Informed Care in Behavioral Health Services. Treatment Improvement Protocol (TIP) Series 57. HHS Publication No. (SMA) 13-4801. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2014.
[134] *Citation for entire section that follows*. Van Der Kolk B. The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma. New York: Penguin Random House LLC, 2014.
[135] Oral R, Ramirez M, Coohey C, Nakada S, Walz A, Kuntz A, Benoit J, Peek-Asa C/International Pediatric Research Foundation, Inc. Adverse childhood experiences and trauma informed care: the future of health care. Pediatric Research. 2015. Doi: 10.1038/pr.2015.197.
[136] McEwen, BS. Brain on Stress: How the Social Environment Gets Under the Skin. Proc. National Academy of Science. 2012; 109: 17180-17185.
[137] Korotana LM, Dobson KS, Pusch D, Josephson T. A Review of Primary Care Interventions to Improve Health Outcomes in Adult Survivors of Adverse Childhood Experiences. Clinical Psychology Review. 2016; 46: 59-90.
[138] Center for Disease Control and Prevention (CDC). About the CDC-Kaiser ACE Study. www.cdc.gov/violenceprevention/acestudy/about.html. Accessed Aug. 28-Sept. 6, 2016. (Citation for entire paragraph)
[139] Siegel D. Pocket guide to interpersonal neurobiology: an integrative handbook of the mind. New York: W. W. Norton & Company, 2012.
[140] Center for Disease Control and Prevention (CDC). About the CDC-Kaiser ACE Study. www.cdc.gov/violenceprevention/acestudy/about.html. Accessed Aug. 28-Sept. 6, 2016. (Citation for first three sentences in the paragraph).
[141] Clarkson Freeman PA. Prevalence and Relationship between Adverse Childhood Experiences and Child Behavior among Young Children. Infant Mental Health Journal. 2014; 35(6): 544-554.
[142] Clarkson Freeman PA. Prevalence and Relationship between Adverse Childhood Experiences and Child Behavior among Young Children. Infant Mental Health Journal. 2014; 35(6): 544-554.
[143] Bethell C, Gombojav N, Solloway M, Wissow L. Adverse childhood experiences, resilience and mindfulness-based approaches: common denominator issues for children with emotional, mental, or behavioral problems. Child and Adolescent Psychiatric Clinics of North America. 2016; 25(2): 139-56.
[144] Giovanelli A, Reynolds AJ, Mondi CF, Ou S. Adverse childhood experiences and adult well-being in a low-income, urban cohort. Pediatrics. 2016; 137(4): 1-13.

[145] Slack KS, Font, SA, Jones J. The complex interplay of adverse childhood experiences, race, and income. 2017; 42(1): e24-e31. doi: 10.1093/hsw/hlw059.
[146] Kenney MK, Singh GK. Adverse childhood experiences among American Indian/Alaska Native children: the 2011-2012 National Survey of Children's Health. Scientifica. 2016. 7424239. doi: 10.1155/2016/7424239. Epub 2016 Jul 26.
[147] Schilling EA, Aseltine RH, Gore S. Adverse childhood experiences and mental health in young adults: a longitudinal survey. BMC Public Health. 2007; 7:30. doi:10.1186/1471-2458-7-30.
[148] Hwahng SJ, Nuttbrock L. Adolescent gender-related abuse, androphilia, and HIV risk among transfeminine people of color in New York City. Journal of Homosexuality. 2014; 61(5): 691-713. doi: 10.1080/00918369.2014.870439.
[149] Jackson JS, Knight KM, Rafferty JA. Race and unhealthy behaviors: Chronic stress, the HPA axis, and physical and mental health disparities over the life course. American Journal of Public Health. 2010; 100: 933–939.
[150] Gjelsvik A, Dumont DM, Nunn A. Incarceration of a household member and Hispanic health disparities: childhood exposure and adult chronic disease risk behaviors. Prevention of Chronic Diseases. 2013; 10: E69. doi: 10.5888/pcd10.120281.
[151] Slack KS, Font, SA, Jones J. The complex interplay of adverse childhood experiences, race, and income. 2017; 42(1): e24-e31. doi: 10.1093/hsw/hlw059.
[152] Kenney MK, Singh GK. Adverse childhood experiences among American Indian/Alaska Native children: the 2011-2012 National Survey of Children's Health. Scientifica. 2016. 7424239. doi: 10.1155/2016/7424239. Epub 2016 Jul 26.
[153] Gjelsvik A, Dumont DM, Nunn A. Incarceration of a household member and Hispanic health disparities: childhood exposure and adult chronic disease risk behaviors. Prevention of Chronic Diseases. 2013; 10: E69. doi: 10.5888/pcd10.120281.
[154] Schilling EA, Aseltine RH, Gore S. Adverse childhood experiences and mental health in young adults: a longitudinal survey. BMC Public Health. 2007; 7:30. doi:10.1186/1471-2458-7-30.
[155] Schiff M, Plotnikova M, Dingle K, Williams GM, Najman J, Clavarino A. Does adolescent's exposure to parental intimate partner conflict and violence predict psychological distress and substance use in young adulthood? A longitudinal study. Child Abuse Neglect. 2014; 38(12): 1945-54.
[156] Liu Y, Sun Y, Tao F, Tong S. Associations between adverse childhood experiences with early puberty timing and possible gender differences. Zhonghua Liu Xing Bing Xue Za Zhi. 2015; 36(4): 314-317.
[157] Nicolaisen M, Thorsen K. Loneliness among men and women: a five-year follow-up study. Aging and Mental Health. 2014; 18(2): 194-206.
[158] Center for Disease Control and Prevention (CDC). About the CDC-Kaiser ACE Study. www.cdc.gov/violenceprevention/acestudy/about.html. Accessed Aug. 28-Sept. 6, 2016.
[159] Giovanelli A, Reynolds AJ, Mondi CF, Ou S. Adverse childhood experiences and adult well-being in a low-income, urban cohort. Pediatrics. 2016; 137(4): 1-13.
[160] DeSantis SM, Baker NL, Back SE, Spratt E, Ciolino JD, Moran-Santa Maria M, Dipankar B, Brady KT. Gender differences in the effect of early life trauma on hypothalamic-pituitary-adrenal axis functioning. Depression and Anxiety. 2011; 28(5): 383-392.
[161] Friedman EM, Montez JK, Sheehan CM, Guenewald TL, Seeman TE. Childhood adversities and adult cardiometabolic health: does the quantity, timing, and type of adversity matter? Journal of Aging and Health. 2015; 27(8): 1311-1338. doi: 10.1177/0898264315580122. [Epub 2015 Apr 22.]
[162] Nuttbrock L, Bockting W, Mason M, Hwahng S, Rosenblum A, Macri M, & Becker J. A further assessment of Blanchard's Typology of Homosexual Versus Non-Homosexual or Autogynephilic Gender Dysphoria. Archives of Sexual Behavior. 2011; 40: 247–257.
[163] Schneeberger AR, Dietl MF, Muenzenmaier KH, Huber CG, Lang UE. Stressful childhood experiences and health outcomes in sexual minority populations: a systematic review. Social Psychiatry and Psychiatric Epidemiology. 2014; 49(9): 1427-1445.
[164] Hwahng SJ, Nuttbrock L. Adolescent gender-related abuse, androphilia, and HIV risk among transfeminine people of color in New York City. Journal of Homosexuality. 2014; 61(5): 691-713. doi: 10.1080/00918369.2014.870439.
[165] Begle AM, Dumas JE, Hanson RF. Predicting child abuse potential: an empirical investigation of two theoretical frameworks. Journal of Clinical Child and Adolescent Psychology. 2010; 39(2): 208-219.
[166] Brofenbrenner U, Ceci SJ. Nature-nurture reconceptualized in developmental perspective: a bioecological model. Psychological Review. 1994; 101(4): 568-586.

[167] Bronfenbrenner U, Morris P. The Ecology of Developmental processes in Lerner RM (Ed), Theoretical Models of Human Development. New York: Wiley, 1998: 993-1028.
[168] Meinck F, Cluber LD, Boyes ME, Mhlongo EL. Risk and protective factors for physical and sexual abuse of children and adolescents in Africa: a review and implications for practice. Trauma, Violence, and Abuse. 2015. 16(1): 81-107.
[169] Begle AM, Dumas JE, Hanson RF. Predicting child abuse potential: an empirical investigation of two theoretical frameworks. Journal of Clinical Child and Adolescent Psychology. 2010; 39(2): 208-219.
[170] Schilling S, Christian CW. Child abuse and neglect. Child and Adolescent Psychiatric Clinics of North America. 2014; 23(2): 309-319.
[171] Cronholm PF, Forke CM, Wade R, Bair-Merritt MH, Davis M, Harkins-Schwarz M, Pachter LM, Fein JA. Adverse childhood experiences: expanding the concept of adversity. American Journal of Preventive Medicine. 2015; 49(3): 354-361.
[172] Finkelhor D, Shattuck A, Turner H, Hamby S. Improving the Adverse Childhood Experiences Study Scale. Journal of the American Medical Association Pediatrics. 2013;167(1):70–75
[173] Wulczyn F / Princeton University. Epidemiological perspectives on maltreatment prevention. The Future of Children: Preventing Child Maltreatment. 2009; 19(2): 39-66.
[174] Ben-Natan M, Sharon I, Barbashov P, Minasyan Y, Hanukayev I, Kajdan D, Klein-Kremer A. Risk factors for child abuse: quantitative correlational design. Journal of Pediatric Nursing. 2014; 29(3): 220-227.
[175] Sidebotham P, Heron J. Child maltreatment in the "children of the nineties": A cohort study of risk factors. Child Abuse & Neglect. 2006; 30: 497–522.
[176] Schilling S, Christian CW. Child abuse and neglect. Child and Adolescent Psychiatric Clinics of North America. 2014; 23(2): 309-319.
[177] Duffy JY, Hughes M, Asnes AG, Leventhal JM. Child maltreatment and risk patterns among participants in a child abuse prevention program. Child Abuse and Neglect. 2015; 44: 184-193.
[178] Finkelhor D, Shattuck A, Turner H, Hamby S. Improving the Adverse Childhood Experiences Study Scale. Journal of the American Medical Association Pediatrics. 2013;167(1):70–75
[179] Ben-Natan M, Sharon I, Barbashov P, Minasyan Y, Hanukayev I, Kajdan D, Klein-Kremer A. Risk factors for child abuse: quantitative correlational design. Journal of Pediatric Nursing. 2014; 29(3): 220-227.
[180] Center for Disease Control and Prevention (CDC). About the CDC-Kaiser ACE Study. www.cdc.gov/violenceprevention/acestudy/about.html. Accessed Aug. 28-Sept. 6, 2016.
[181] Meinck F, Cluber LD, Boyes ME, Mhlongo EL. Risk and protective factors for physical and sexual abuse of children and adolescents in Africa: a review and implications for practice. Trauma, Violence, and Abuse. 2015. 16(1): 81-107.
[182] Meinck F, Cluber LD, Boyes ME, Mhlongo EL. Risk and protective factors for physical and sexual abuse of children and adolescents in Africa: a review and implications for practice. Trauma, Violence, and Abuse. 2015. 16(1): 81-107.
[183] Begle AM, Dumas JE, Hanson RF. Predicting child abuse potential: an empirical investigation of two theoretical frameworks. Journal of Clinical Child and Adolescent Psychology. 2010; 39(2): 208-219.
[184] Casanueva C, Martin SL, Runyan DK. Repeated reports for child maltreatment among intimate partner violence victims: Findings from the National Survey of Child and Adolescent Well-Being. Child Abuse and Neglect. 2009; 33(2): 84-93.
[185] Paxson C, Jones L. Work, Welfare, and Child Maltreatment. Journal of Labor Economics. 2002; 20(3): 435-74.
[186] Meinck F, Cluber LD, Boyes ME, Mhlongo EL. Risk and protective factors for physical and sexual abuse of children and adolescents in Africa: a review and implications for practice. Trauma, Violence, and Abuse. 2015. 16(1): 81-107.
[187] Sidebotham P, Heron J. Child maltreatment in the "children of the nineties": A cohort study of risk factors. Child Abuse & Neglect. 2006; 30: 497–522.
[188] Schilling S, Christian CW. Child abuse and neglect. Child and Adolescent Psychiatric Clinics of North America. 2014; 23(2): 309-319.
[189] Wulczyn F / Princeton University. Epidemiological perspectives on maltreatment prevention. The Future of Children: Preventing Child Maltreatment. 2009; 19(2): 39-66.
[190] Paxson C, Jones L. Work, Welfare, and Child Maltreatment. Journal of Labor Economics. 2002; 20(3): 435-74.
[191] Ben-Natan M, Sharon I, Barbashov P, Minasyan Y, Hanukayev I, Kajdan D, Klein-Kremer A. Risk factors for child abuse: quantitative correlational design. Journal of Pediatric Nursing. 2014; 29(3): 220-227.

[192] Meinck F, Cluber LD, Boyes ME, Mhlongo EL. Risk and protective factors for physical and sexual abuse of children and adolescents in Africa: a review and implications for practice. Trauma, Violence, and Abuse. 2015. 16(1): 81-107.
[193] Sidebotham P, Heron J. Child maltreatment in the "children of the nineties": A cohort study of risk factors. Child Abuse & Neglect. 2006; 30: 497–522.
[194] Begle AM, Dumas JE, Hanson RF. Predicting child abuse potential: an empirical investigation of two theoretical frameworks. Journal of Clinical Child and Adolescent Psychology. 2010; 39(2): 208-219.
[195] Schilling S, Christian CW. Child abuse and neglect. Child and Adolescent Psychiatric Clinics of North America. 2014; 23(2): 309-319.
[196] Finkelhor D, Shattuck A, Turner H, Hamby S. Improving the Adverse Childhood Experiences Study Scale. Journal of the American Medical Association Pediatrics. 2013;167(1):70–75.
[196] Giovanelli A, Reynolds AJ, Mondi CF, Ou S. Adverse childhood experiences and adult well-being in a low-income, urban cohort. Pediatrics. 2016; 137(4): 1-13.
[197] Duffy JY, Hughes M, Asnes AG, Leventhal JM. Child maltreatment and risk patterns among participants in a child abuse prevention program. Child Abuse and Neglect. 2015; 44: 184-193.
[198] Meinck F, Cluber LD, Boyes ME, Mhlongo EL. Risk and protective factors for physical and sexual abuse of children and adolescents in Africa: a review and implications for practice. Trauma, Violence, and Abuse. 2015. 16(1): 81-107.
[199] Begle AM, Dumas JE, Hanson RF. Predicting child abuse potential: an empirical investigation of two theoretical frameworks. Journal of Clinical Child and Adolescent Psychology. 2010; 39(2): 208-219.
[200] Cronholm PF, Forke CM, Wade R, Bair-Merritt MH, Davis M, Harkins-Schwarz M, Pachter LM, Fein JA. Adverse childhood experiences: expanding the concept of adversity. American Journal of Preventive Medicine. 2015; 49(3): 354-361.
[201] Ben-Natan M, Sharon I, Barbashov P, Minasyan Y, Hanukayev I, Kajdan D, Klein-Kremer A. Risk factors for child abuse: quantitative correlational design. Journal of Pediatric Nursing. 2014; 29(3): 220-227.
[202] Meinck F, Cluber LD, Boyes ME, Mhlongo EL. Risk and protective factors for physical and sexual abuse of children and adolescents in Africa: a review and implications for practice. Trauma, Violence, and Abuse. 2015. 16(1): 81-107.
[203] Finkelhor D, Shattuck A, Turner H, Hamby S. Improving the Adverse Childhood Experiences Study Scale. Journal of the American Medical Association Pediatrics. 2013; 167(1): 70–75.
[204] Finkelhor D, Shattuck A, Turner H, Hamby S. A revised inventory of Adverse Childhood Experiences. Child Abuse and Neglect. 2015; 48: 13-21.
[205] Moses JO, Villodas MT. The potential protective role of peer relationships on school engagement in at-risk adolescents. Journal of Youth and Adolescence. 2017. DOI 10.1007/s10964-017-0644-1. Epub.
[206] Wulczyn F / Princeton University. Epidemiological perspectives on maltreatment prevention. The Future of Children: Preventing Child Maltreatment. 2009; 19(2): 39-66.
[207] Sidebotham P, Heron J. Child maltreatment in the "children of the nineties": A cohort study of risk factors. Child Abuse & Neglect. 2006; 30: 497–522.
[208] Begle AM, Dumas JE, Hanson RF. Predicting child abuse potential: an empirical investigation of two theoretical frameworks. Journal of Clinical Child and Adolescent Psychology. 2010; 39(2): 208-219.
[209] Finkelhor D, Shattuck A, Turner H, Hamby S. Improving the Adverse Childhood Experiences Study Scale. Journal of the American Medical Association Pediatrics. 2013;167(1):70–75
[209] Giovanelli A, Reynolds AJ, Mondi CF, Ou S. Adverse childhood experiences and adult well-being in a low-income, urban cohort. Pediatrics. 2016; 137(4): 1-13.
[210] Ben-Natan M, Sharon I, Barbashov P, Minasyan Y, Hanukayev I, Kajdan D, Klein-Kremer A. Risk factors for child abuse: quantitative correlational design. Journal of Pediatric Nursing. 2014; 29(3): 220-227.
[211] Meinck F, Cluber LD, Boyes ME, Mhlongo EL. Risk and protective factors for physical and sexual abuse of children and adolescents in Africa: a review and implications for practice. Trauma, Violence, and Abuse. 2015. 16(1): 81-107.
[212] Finkelhor D, Shattuck A, Turner H, Hamby S. Improving the Adverse Childhood Experiences Study Scale. Journal of the American Medical Association Pediatrics. 2013;167(1):70–75
[213] Finkelhor D, Shattuck A, Turner H, Hamby S. Improving the Adverse Childhood Experiences Study Scale. Journal of the American Medical Association Pediatrics. 2013;167(1):70–75
[214] Wulczyn F / Princeton University. Epidemiological perspectives on maltreatment prevention. The Future of Children: Preventing Child Maltreatment. 2009; 19(2): 39-66.

[215] Putnam-Hornstein E, Needell B, King Bryn, Johnson-Motoyama M. Racial and ethnic disparities: a population-based examination of risk factors for involvement with child protective services. Child Abuse and Neglect. 2013; 37: 33-46.
[216] Regnaut O, Jeu-Steenhouwer M, Manaouil C, Gignon M. Risk factors for child abuse: levels of knowledge and difficulties in family medicine: a mixed methods study. BMC Research Notes. 2015; 8(620): 1-6.
[217] Center for Disease Control and Prevention (CDC). About the CDC-Kaiser ACE Study. www.cdc.gov/violenceprevention/acestudy/about.html. Accessed Aug. 28-Sept. 6, 2016.
[218] Centers for Disease Control and Prevention (CDC MMRW). Morbidity and Mortality Weekly Report (MMWR) – Adverse Childhood Experiences Reported by Adults – Five States, 2009. 2010; 59(49): 1609-1636.
[219] Thompson R, Flaherty EG, English DJ, Litrownik AJ, Dbowitz H, Kotch JB, Runyan DK. Trajectories of Adverse Childhood Experiences and Self-Reported Health at Age 18. Academy of Pediatrics. 2015; 15(5): 503-509.
[220] Anda RF, Dong M, Brown DW, Felitti VJ, Giles WH, Perry GS, Edwards VJ, Dube SR. The Relationship of Adverse Childhood Experiences to a History of Premature Death of Family Members. BMC Public Health. 2009; 9: 106.
[221] Isumi A, Fujiwara T. Association of adverse childhood experiences with shaking and smothering behaviors among Japanese caregivers. Child Abuse and Neglect. 2016; 57: 12-20.
[222] Shonkoff JP, Garner AS. Committee on Psychological Aspects of Child and Family Health/Committee on Early Childhood Adoption, and Dependent Care. Section on Developmental and Behavioral Pediatrics. The lifelong effects of early childhood adversity and toxic stress. Pediatrics. 2012; 129: e232-e246.
[223] Center for Disease Control and Prevention (CDC). About the CDC-Kaiser ACE Study. www.cdc.gov/violenceprevention/acestudy/about.html. Accessed Aug. 28-Sept. 6, 2016.
[224] Ebrahiminejad S, Poursharifi H, Bakhshiour Roodsari A, Zeinodini Z, Noorbakhsh S. The effectiveness of mindfulness-based cognitive therapy on Iranian female adolescents suffering from social anxiety. Iranian Red Crescent Medical Journal. 2016; 18(11): e25116. doi: 10.5812/ircmj.25116. eCollection 2016.
[225] McEwen BS. In pursuit of resilience: stress, epigenetics, and brain plasticity. The Annals of the New York Academy of Sciences – Issue: Advances in Meditation Research. 2016; 1373: 56-64.
[226] Giovanelli A, Reynolds AJ, Mondi CF, Ou S. Adverse childhood experiences and adult well-being in a low-income, urban cohort. Pediatrics. 2016; 137(4): 1-13.
[227] Korotana LM, Dobson KS, Pusch D, Josephson T. A Review of Primary Care Interventions to Improve Health Outcomes in Adult Survivors of Adverse Childhood Experiences. Clinical Psychology Review. 2016; 46: 59-90.
[228] Baxter MA, Hemming EJ McIntosh HC, Hellman CM. Exploring the relationship between adverse childhood experiences and hope. Journal of Child Sexual Abuse. 2017; Aug 31: 1-9. doi: 10.1080/10538712.2017.1365319. [Epub ahead of print]
[229] Nicolaisen M, Thorsen K. Loneliness among men and women: a five-year follow-up study. Aging and Mental Health. 2014; 18(2): 194-206.
[230] Van Der Kolk B. The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma. New York: Penguin Random House LLC, 2014. Print.
[231] Van Der Kolk B. The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma. New York: Penguin Random House LLC, 2014. Print.
[232] McEwen BS. In pursuit of resilience: stress, epigenetics, and brain plasticity. The Annals of the New York Academy of Sciences – Issue: Advances in Meditation Research. 2016; 1373: 56-64.
[233] Van Der Kolk B. The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma. New York: Penguin Random House LLC, 2014. Print.
[234] Van Der Kolk B. The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma. New York: Penguin Random House LLC, 2014. Print.
[235] Dube SR, Anda RF, Felitti VJ, Chapman DP, Williamson DF, Giles WH. Childhood abuse, household dysfunction, and the risk of attempted suicide throughout the life span: findings from the Adverse Childhood Experiences Study. JAMA. 2001; 286(24): 3089-3096.
[236] McEwen BS. In pursuit of resilience: stress, epigenetics, and brain plasticity. The Annals of the New York Academy of Sciences – Issue: Advances in Meditation Research. 2016; 1373: 56-64.
[237] Liu Y, Sun Y, Tao F, Tong S. Associations between adverse childhood experiences with early puberty timing and possible gender differences. Zhonghua Liu Xing Bing Xue Za Zhi. 2015; 36(4): 314-317.
[238] McEwen BS. In pursuit of resilience: stress, epigenetics, and brain plasticity. The Annals of the New York Academy of Sciences – Issue: Advances in Meditation Research. 2016; 1373: 56-64.
[239] McEwen BS. In pursuit of resilience: stress, epigenetics, and brain plasticity. The Annals of the New York Academy of Sciences – Issue: Advances in Meditation Research. 2016; 1373: 56-64.

[240] Kiecolt-Glaser JK, Gougin J-P, Weng N, Malarkey WB, Beversdorf DQ, Glaser R. Childhood Adversity Heightens the Impact of Later-Life Caregiving Stress on Telomere Length and Inflammation. Psychosomatic Medicine. 2011; 73(1): 16-22.
[241] Van Der Kolk B. The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma. New York: Penguin Random House LLC, 2014. Print.
[242] McEwen BS. In pursuit of resilience: stress, epigenetics, and brain plasticity. The Annals of the New York Academy of Sciences – Issue: Advances in Meditation Research. 2016; 1373: 56-64.
[243] McEwen BS. In pursuit of resilience: stress, epigenetics, and brain plasticity. The Annals of the New York Academy of Sciences – Issue: Advances in Meditation Research. 2016; 1373: 56-64.
[244] Ishookana R, Marttunen M, Hakko H, Riipinen P, Riala K. The impact of adverse childhood experiences on obesity and unhealthy weight control behaviors among adolescents. Comprehensive Psychiatry. 2016; 71: 17-24.
[245] Safranek, T., Buss, B., Yeoman, K. (2012). Epidemiologic Investigation: Association between Adverse Childhood Experiences and Adverse Health Outcomes. The Office of Epidemiology at the Nebraska Department of Health and Human Services, 1-47.
[246] McEwen BS. In pursuit of resilience: stress, epigenetics, and brain plasticity. The Annals of the New York Academy of Sciences – Issue: Advances in Meditation Research. 2016; 1373: 56-64.
[247] Ishookana R, Marttunen M, Hakko H, Riipinen P, Riala K. The impact of adverse childhood experiences on obesity and unhealthy weight control behaviors among adolescents. Comprehensive Psychiatry. 2016; 71: 17-24.
[248] Safranek, T., Buss, B., Yeoman, K. (2012). Epidemiologic Investigation: Association between Adverse Childhood Experiences and Adverse Health Outcomes. The Office of Epidemiology at the Nebraska Department of Health and Human Services, 1-47.
[249] Frankenberger DJ, Clements-Nolle K, Yang W. The association between adverse childhood experiences and alcohol use during pregnancy in a representative sample of adult women. Women's Health Issues. 2015; 25(6): 688-95.
[250] Hwahng SJ, Nuttbrock L. Adolescent gender-related abuse, androphilia, and HIV risk among transfeminine people of color in New York City. Journal of Homosexuality. 2014; 61(5): 691-713. doi: 10.1080/00918369.2014.870439.
[251] Isumi A, Fujiwara T. Association of adverse childhood experiences with shaking and smothering behaviors among Japanese caregivers. Child Abuse and Neglect. 2016; 57: 12-20.
[252] McEwen BS. In pursuit of resilience: stress, epigenetics, and brain plasticity. The Annals of the New York Academy of Sciences – Issue: Advances in Meditation Research. 2016; 1373: 56-64.
[253] Safranek T, Buss B, Yeoman K. Nebraska ACE Study Findings. 2012. 11-12.
[254] Mingione CJ, Heffner JL, Blom TJ, Anthenelli RM. Childhood adversity, serotonin transporter (5-HTTLPR) genotype, and risk of cigarette smoking and nicotine dependence in alcohol dependent adults. Drug and Alcohol Dependence. 2012; 123(1-3): 201-206.
[255] Ishookana R, Marttunen M, Hakko H, Riipinen P, Riala K. The impact of adverse childhood experiences on obesity and unhealthy weight control behaviors among adolescents. Comprehensive Psychiatry. 2016; 71: 17-24.
[256] Wingenfeld K, Kuehl LK, Boeker A, Schultebraucks K, Ritter K, Hellmann-Regan J, Otte C, Spitzer C. Stress reactivity and its effects on subsequent food intake in depressed and healthy women with and without adverse childhood experiences. Psychoneuroendocrinology. 2017; 80: 122-130.
[257] Brown MJ, Masho SW, Perera RA, Mezuk B, Puglsey RA, Cohen SA. Sex disparities in adverse childhood experiences and HIV/STIs: mediation of psychopathology and sexual behaviors. AIDS and Behavior. 2017; 21(6): 1550-1556.
[258] Giovanelli A, Reynolds AJ, Mondi CF, Ou S. Adverse childhood experiences and adult well-being in a low-income, urban cohort. Pediatrics. 2016; 137(4): 1-13.
[259] Korotana LM, Dobson KS, Pusch D, Josephson T. A Review of Primary Care Interventions to Improve Health Outcomes in Adult Survivors of Adverse Childhood Experiences. Clinical Psychology Review. 2016; 46: 59-90.
[260] Center for Disease Control and Prevention (CDC). About the CDC-Kaiser ACE Study. www.cdc.gov/violenceprevention/acestudy/about.html. Accessed Aug. 28-Sept. 6, 2016.
[261] Center for Disease Control and Prevention (CDC). About the CDC-Kaiser ACE Study. www.cdc.gov/violenceprevention/acestudy/about.html. Accessed Aug. 28-Sept. 6, 2016.
[262] Center for Disease Control and Prevention (CDC). About the CDC-Kaiser ACE Study. www.cdc.gov/violenceprevention/acestudy/about.html. Accessed Aug. 28-Sept. 6, 2016.
[263] Giovanelli A, Reynolds AJ, Mondi CF, Ou S. Adverse childhood experiences and adult well-being in a low-income, urban cohort. Pediatrics. 2016; 137(4): 1-13.

[264] Center for Disease Control and Prevention (CDC). About the CDC-Kaiser ACE Study. www.cdc.gov/violenceprevention/acestudy/about.html. Accessed Aug. 28-Sept. 6, 2016.
[265] Finkelhor D, Shattuck A, Turner H, Hamby S. Improving the Adverse Childhood Experiences Study Scale. Journal of the American Medical Association Pediatrics. 2013;167(1):70–75
[266] Giovanelli A, Reynolds AJ, Mondi CF, Ou S. Adverse childhood experiences and adult well-being in a low-income, urban cohort. Pediatrics. 2016; 137(4): 1-13.
[267] Van Der Kolk B. The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma. New York: Penguin Random House LLC, 2014. Print.
[268] Cronholm PF, Forke CM, Wade R, Bair-Merritt MH, Davis M, Harkins-Schwarz M, Pachter LM, Fein JA. Adverse childhood experiences: expanding the concept of adversity. American Journal of Preventive Medicine. 2015; 49(3): 354-361.
[269] Cronholm PF, Forke CM, Wade R, Bair-Merritt MH, Davis M, Harkins-Schwarz M, Pachter LM, Fein JA. Adverse childhood experiences: expanding the concept of adversity. American Journal of Preventive Medicine. 2015; 49(3): 354-361.
[270] Center for Disease Control and Prevention (CDC). About the CDC-Kaiser ACE Study. www.cdc.gov/violenceprevention/acestudy/about.html. Accessed Aug. 28-Sept. 6, 2016.
[271] Center for Disease Control and Prevention (CDC). About the CDC-Kaiser ACE Study. www.cdc.gov/violenceprevention/acestudy/about.html. Accessed Aug. 28-Sept. 6, 2016.
[272] Center for Disease Control and Prevention (CDC). About the CDC-Kaiser ACE Study. www.cdc.gov/violenceprevention/acestudy/about.html. Accessed Aug. 28-Sept. 6, 2016.
[273] Chartier MJ, Walker JR, Naimark B. Separate and cumulative effects of adverse childhood experiences in predicting adult health and health care utilization. Child Abuse and Neglect. 2010; 34: 454-464.
[274] Center for Disease Control and Prevention (CDC). About the CDC-Kaiser ACE Study. www.cdc.gov/violenceprevention/acestudy/about.html. Accessed Aug. 28-Sept. 6, 2016.
[275] Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz A, Edwards V, Koss MP, Marks JS. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: the Adverse Childhood Experiences (ACE) Study. American Journal of Preventive Medicine. 1998; 14(4): 245-258.
[276] Dube SR, Felitti VJ, Dong M, Chapman DP, Giles WH, Anda RF. Childhood Abuse, Neglect, and Household Dysfunction and the Risk of Illicit Drug Use: The Adverse Childhood Experiences Study. Pediatrics. 2003; 11(3): 564-572.
[277] Kerker BD, Zhang J, Nadeem E, Stein REK, Hurlburt MS, Heneghan A, Landsverk J, McCue Horwitz S. Adverse Childhood Experiences and Mental Health, Chronic Medical Conditions, and Development in Young Children. Academic Pediatrics. 2015; 15(5): 510-517.
[278] McLaughlin KA, Sheridan MA, Lambert HK. Childhood Adversity and Neural Development (CAND): Deprivation and Threat as Distinct Dimensions of Early Experience. Annals of the New York Academy of Science. 2014; 47: 578-591.
[279] Thompson R, Flaherty EG, English DJ, Litrownik AJ, Dbowitz H, Kotch JB, Runyan DK. Trajectories of Adverse Childhood Experiences and Self-Reported Health at Age 18. Academy of Pediatrics. 2015; 15(5): 503-509.
[280] Bellis MA, Hughes K, Leckenby N, Perkins C, Lowey H. National Household Survey of Adverse Childhood Experiences and Their Relationship with Resilience to Health-Harming Behaviors in England. BioMed Central (BMC) Medicine. 2014; 12: 72.
[281] Brockie TN, Dana-Sacco G, Wallen GR, Wilcox HC, Campbell JC. The Relationship of Adverse Childhood Experiences to PTSD, Depression, Poly-Drug Use and Suicide Attempt in Reservation-Based Native American Adolescents and Young Adults. American Journal of Community Psychology. 2015; 55(3-4): 411-421.
[282] Cluver L, Orkin M, Boyes ME, Sherr L. Child and Adolescent Suicide Attempts, Suicidal Behavior, and Adverse Childhood Experiences in South Africa: A Prospective Study. Journal of Adolescent Health. 2015; 57: 52-59.
[283] Oral R, Ramirez M, Coohey C, Nakada S, Walz A, Kuntz A, Benoit J, Peek-Asa C. Adverse Childhood Experiences and Trauma Informed Care: The Future of Health Care. Pediatric Research. 2015. [Electronically published ahead of print] http://www.nature.com.ezp.welch.jhmi.edu/pr/journal/vaop/ncurrent/pdf/pr2015197a.pdf
[284] Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz A, Edwards V, Koss MP, Marks JS. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: the Adverse Childhood Experiences (ACE) Study. American Journal of Preventive Medicine. 1998; 14(4): 245-258.
[285] Rinpoche A, Zangmo AC. The Tibetan yoga of breath: breathing practices for healing the body and cultivating wisdom. Boulder: Shambhala Publications, Inc., 2013. Print.
[286] Smalley SL, Winston D. Fully Present: The Science, Art, and Practice of Mindfulness. Philadephia, PA: Da Capo Press/Perseus Books Group, 2010.

[287] Van Der Kolk B. The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma. New York: Penguin Random House LLC, 2014. Print.
[288] Warshaw C, Sullivan CM, Rivera EA. A systematic review of trauma-focused interventions for domestic violence survivors. National Center on Domestic Violence, Trauma, and Mental Health. 2013. Website: http://www.nationalcenterdvtraumamh.org/wp-content/uploads/2013/03/NCDVTMH_EBPLitReview2013.pdf.
[289] Korotana LM, Dobson KS, Pusch D, Josephson T. A Review of Primary Care Interventions to Improve Health Outcomes in Adult Survivors of Adverse Childhood Experiences. Clinical Psychology Review. 2016; 46: 59-90.
[290] Mehlum L, Tormoen AJ, Ramberg M, Haga E, Diep LM, Laberg S, Larsson BS, Stanley BH, Miller AL, Sund AM, Groholt B. Dialectical behavior therapy for adolescents with repeated suicidal and self-harming behavior: a randomized trial. Journal of the American Academy of Child and Adolescent Psychiatry. 2014; 53(10): 1082-1091.
[291] Korotana LM, Dobson KS, Pusch D, Josephson T. A Review of Primary Care Interventions to Improve Health Outcomes in Adult Survivors of Adverse Childhood Experiences. Clinical Psychology Review. 2016; 46: 59-90.
[292] Linehan MM, Wilks CR. The course and evolution of dialectical behavior therapy. American Journal of Psychotherapy. 2015; 69(2): 97-110.
[293] Shapiro F. The role of eye movement desensitization and reprocessing (EDMR) therapy in medicine: addressing the psychological and physical symptoms stemming from adverse life experiences. 2014; 18(1): 71-77.
[294] Korotana LM, Dobson KS, Pusch D, Josephson T. A Review of Primary Care Interventions to Improve Health Outcomes in Adult Survivors of Adverse Childhood Experiences. Clinical Psychology Review. 2016; 46: 59-90.
[295] Shapiro F. The role of eye movement desensitization and reprocessing (EDMR) therapy in medicine: addressing the psychological and physical symptoms stemming from adverse life experiences. 2014; 18(1): 71-77.
[296] Van Der Kolk B. The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma. New York: Penguin Random House LLC, 2014. Print.
[297] Korotana LM, Dobson KS, Pusch D, Josephson T. A Review of Primary Care Interventions to Improve Health Outcomes in Adult Survivors of Adverse Childhood Experiences. Clinical Psychology Review. 2016; 46: 59-90.
[298] Van Der Kolk B. The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma. New York: Penguin Random House LLC, 2014. Print.
[299] Korotana LM, Dobson KS, Pusch D, Josephson T. A Review of Primary Care Interventions to Improve Health Outcomes in Adult Survivors of Adverse Childhood Experiences. Clinical Psychology Review. 2016; 46: 59-90.
[300] World Health Organization. Guidelines for the Management of Conditions Specifically Related to Stress. 2013. Website: http://apps.who.int/iris/bitstream/10665/85119/1/9789241505406_eng.pdf?ua=1.
[301] World Health Organization. Guidelines for the Management of Conditions Specifically Related to Stress. 2013. Website: http://apps.who.int/iris/bitstream/10665/85119/1/9789241505406_eng.pdf?ua=1.
[302] World Health Organization. Guidelines for the Management of Conditions Specifically Related to Stress. 2013. Website: http://apps.who.int/iris/bitstream/10665/85119/1/9789241505406_eng.pdf?ua=1.
[303] Van Der Kolk B. The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma. New York: Penguin Random House LLC, 2014. Print. Citation for entire passage.
[304] Adele D. The yamas and niyamas: exploring yoga's ethical practice. Duluth, Minnesota: On-Word Bound Books, LLC, 2009. Print.
[305] The yoga sutras of Patañjali. Translation and commentary by Swami Satchidandanda. Buckingham, Virginia: Integral Yoga Publications, 2012. Print.
[306] The Bhagavad-Gita: Krishna's Counsel in a Time of War. Translated by Barbara Stoler Miller. New York: Bantam Dell/Random House, Inc., 2004. Print.
[307] Van Der Kolk B. The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma. New York: Penguin Random House LLC, 2014. Print.
[308] Starr M. Wild mercy: living the fierce and tender wisdom of the women mystics. Boulder, CO: Sounds True, 2019.
[309] Merton T (translation). The way of Chuang Tzu. Canada: Penguin Books Canada, Ltd., 1965. Print.
[310] Tzu L. Tao Teh Ching. Boulder: Shambhala Publications, Inc., 1961. Print.
[311] Sams J. Dancing the dream: the seven sacred paths of human transformation. New York: Harper Colins, 1998.
[312] Quiñones Rosado R. Consciousness-in-action: Toward an Integral Psychology of Liberation and Transformation. Caguas, Puerto Rico: ilé Publications, 2007.
[313] Yogananda P. Autobiography of a yogi. Los Angeles: Self-Realization Fellowship, 2006. Print.
[314] Watts A. The meaning of happiness: the quest for freedom of the spirit in modern psychology and the wisdom of the East. New York: Harper & Row, Publishers, Inc., 1940.
[315] Rinpoche A, Zangmo AC. The Tibetan yoga of breath: breathing practices for healing the body and cultivating wisdom. Boulder: Shambhala Publications, Inc., 2013. Print.

[316] Hahn TN. Being peace. Berkeley: Parallax Press, 1987. Print.
[317] Hahn TN. Peace is every step. New York: Bantam Book, 1991. Print.
[318] Kabat-Zinn J. Wherever You Go, There You Are: Mindfulness Meditation in Everyday Life. New York: Hyperion, 1994. Print.
[319] Chodron P. Start where you are: a guide to compassionate living. Boston: Shambhala Publications, Inc., 1994. Print.
[320] Korotana LM, Dobson KS, Pusch D, Josephson T. A Review of Primary Care Interventions to Improve Health Outcomes in Adult Survivors of Adverse Childhood Experiences. Clinical Psychology Review. 2016; 46: 59-90.
[321] Perry-Parish C, Copeland-Linder N, Webb L, Sibinga EMS. Mindfulness-based approaches for children and youth. 2016; 46(6): 172-178.
[322] Van Der Kolk B. The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma. New York: Penguin Random House LLC, 2014. Print.
[323] McKelvey LM, Whiteside-Mansell L, Conners-Burrow NA, Swindle T. Fitzgerald S. Assessing adverse experiences from infancy through early childhood in home visiting programs. Child Abuse and Neglect. 2016; 51: 295-302.
[324] Munns A, Watts R, Hegney D, Walker R. Effectiveness and experiences of families and support workers participating in peer-led parenting support programs delivered as home visiting programs: a comprehensive systematic review. JBI Database of Systematic Reviews and Implementation Reports. 2016; 14(10): 167-208.
[325] Prinz RJ, Sanders MR, Shapiro CJ, Whitaker DJ, Lutzker JR. Population-based prevention of child maltreatment: the U.S. Triple P System Population Trial. Prevention Science. 2009; 10: 1-12.
[326] Korotana LM, Dobson KS, Pusch D, Josephson T. A Review of Primary Care Interventions to Improve Health Outcomes in Adult Survivors of Adverse Childhood Experiences. Clinical Psychology Review. 2016; 46: 59-90.
[327] Britton WB, Lepp NE, Niles HF, Rocha T, Fisher NE, Gold JS. A randomized controlled pilot trial of classroom-based mindfulness meditation compared to an active control condition in sixth-grade children. Journal of School Psychology. 2014; 52(3): 263-278.
[328] Jaycox LH, Stein BD, Wong M. School intervention related to school and community violence. Child and Adolescent Psychiatric Clinics of North America. 2014; 23(2): 281-293.
[329] Sibinga EMS, Webb L, Shazarian SR, Ellen JM. School-based mindfulness instruction: an RCT. Pediatrics. 2016; 137(1). doi: 10.1542/peds.2015-2532. Epub.
[330] Sibinga EMS, Perry-Parish C, Chung S, Johnson SB, Smith M, Ellen JM. School-based mindfulness instruction for urban male youth: a small randomized control trial. Preventive Medicine. 2013; 57(6): 799-801.
[331] Mendelson T, Tandon SD, O'Brennan L, Leaf PJ, Ialongo. NS. Brief report: moving prevention into schools: the impact of a trauma-informed school-based intervention. Journal of Adolescence. 2015; 43: 142-147. Citation for entire paragraph.
[332] Bethell C, Solloway MR, Guinosso S, Hassink S, Srivastav A, Ford D, Simpson LA. Prioritizing possibilities for child and family health: an agenda to address adverse childhood experiences and foster the social and emotional roots of well-being in pediatrics. Academic Pediatrics. 2017; 17(7): S36-S50.
[333] Bethell C, Solloway MR, Guinosso S, Hassink S, Srivastav A, Ford D, Simpson LA. Prioritizing possibilities for child and family health: an agenda to address adverse childhood experiences and foster the social and emotional roots of well-being in pediatrics. Academic Pediatrics. 2017; 17(7): S36-S50.
[334] Minkovitz C, Strobino D, Hughart N. Early effects of the Healthy Steps for Young Children Program. 2001; 155(4): 470-479.
[335] McLearn KT, Strobino DM, Hughart N, Minkovitz CS, Scharfstein D, Marks E, Guyer B. Developmental services in primary care for low-income children: clinicians' perceptions of the Healthy Steps for Young Children program. Journal of Urban Health. 2004; 81(2): 206-221.
[336] Johnston BD, Huebner CE, Anderson ML, Tyll LT, Thompson RS. Healthy steps in an integrated delivery system: child and parent outcomes at 30 months. Archive of Pediatric and Adolescent Medicine. 2006; 160(8): 793-800.
[337] Piotrowski CC, Talavera GA, Mayer JA. Health Steps: a systematic review of a preventive practice-based model of pediatric care. Journal of Developmental and Behavioral Pediatrics. 2009; 30(1): 91-103.
[338] Alley DE, Asomugha CN, Conway PH, Sanghavi DM. Accountable health communities – addressing social needs through Medicare and Medicaid. New England Journal of Medicine. 2016; 374: 8-11.
[339] SAMHSA. Spotlights on six trauma-informed resilient communities. 16 May 2017. Website: https://newsletter.samhsa.gov/2017/05/16/trauma-informed-communities/.
[340] SAMHSA. Spotlights on six trauma-informed resilient communities. 16 May 2017. Website: https://newsletter.samhsa.gov/2017/05/16/trauma-informed-communities/.

[341] https://traumainformedoregon.org/. Citation for entire paragraph.
[342] https://acestoohigh.com/2016/04/03/oregon-governor-kate-brown-signs-landmark-trauma-informed-education-bill-into-law/
[343] Bethell C, Solloway MR, Guinosso S, Hassink S, Srivastav A, Ford D, Simpson LA. Prioritizing possibilities for child and family health: an agenda to address adverse childhood experiences and foster the social and emotional roots of well-being in pediatrics. Academic Pediatrics. 2017; 17(7): S36-S50.
[344] Regnaut O, Jeu-Steenhouwer M, Manaouil C, Gignon M. Risk factors for child abuse: levels of knowledge and difficulties in family medicine: a mixed methods study. BMC Research Notes. 2015; 8(620): 1-6.
[345] Bethell C, Solloway MR, Guinosso S, Hassink S, Srivastav A, Ford D, Simpson LA. Prioritizing possibilities for child and family health: an agenda to address adverse childhood experiences and foster the social and emotional roots of well-being in pediatrics. Academic Pediatrics. 2017; 17(7): S36-S50.
[346] Peace in Schools. Video: "Powerful Video about Mindfulness in Schools". Website: https://youtu.be/cOGM_-zKPTE.
[347] National Center for Complementary and Alternative Medicine (NCCAM)/National Institutes of Health (NIH). Website: https://report.nih.gov/NIHfactsheets/ViewFactSheet.aspx?csid=102. Accessed 1 May 2017.
[348] Shapiro SL, Carlson LE, Astin JA, Feedman B. Mechanisms of mindfulness. Journal of Clinical Psychology. 2006; 62(3): 373-386.
[349] Simkin DR, Black NB. Meditation and mindfulness in clinical practice. Child and Adolescent Psychiatric Clinics of North America. 2014; 23(3): 487-534. doi: 10.1016/j.chc.2014.03.002.
[350] Perry-Parrish C, Copeland-Linder N, Webb L, Shields AH, Sibinga EM. Improving self-regulation in adolescents: current evidence for the role of mindfulness-based cognitive therapy. Adolescent Health, Medicine, and Therapeutics. 2016; 7: 101-108.
[351] Ebrahiminejad S, Poursharifi H, Bakhshiour Roodsari A, Zeinodini Z, Noorbakhsh S. The effectiveness of mindfulness-based cognitive therapy on Iranian female adolescents suffering from social anxiety. Iranian Red Crescent Medical Journal. 2016; 18(11): e25116. doi: 10.5812/ircmj.25116. eCollection 2016.
[352] Dube SR, Felitti VJ, Dong M, Giles WH, Anda RF. The Impact of Adverse Childhood Experiences on Health Problems: Evidence from Four Birth Cohorts Dating Back to 1900. Preventive Medicine. 2003; 37(3): 268-277.
[353] Bronfenbrenner U, Morris P. The Ecology of Developmental processes in Lerner RM (Ed), Theoretical Models of Human Development. New York: Wiley, 1998: 993-1028.
[354] McEwen, BS. Brain on Stress: How the Social Environment Gets Under the Skin. Proc. National Academy of Science. 2012; 109: 17180-17185.
[355] Bethell C, Gombojav N, Solloway M, Wissow L. Adverse childhood experiences, resilience and mindfulness-based approaches: common denominator issues for children with emotional, mental, or behavioral problems. Child and Adolescent Psychiatric Clinics of North America. 2016; 25(2): 139-56.
[356] Beutel ME, Tibubos AN, Klein EM, Schmutzer G, Reiner I, Kocalevent RD, Brahler E. Childhood adversities and distress – The role of resilience in a representative sample. PLoS One. 2017; 12(3): e0173826. doi: 10.1371/journal.pone.0173826. eCollection 2017.
[357] McEwen, BS. Brain on Stress: How the Social Environment Gets Under the Skin. Proc. National Academy of Science. 2012; 109: 17180-17185.
[358] Ortiz R, Sibinga EM. The role of mindfulness in reducing the adverse effects of childhood stress and trauma. Children. 2017; 4(16): 1-19. Doi: 10.3390/children4030016.
[359] Blum RW, Astone NM, Decker MR, Chandra Mouli V. A conceptual framework for early adolescence: a platform for research. International Journal of Adolescent Medicine and Health. 2014; 26(3): 321-331.
[360] Galla BM. Within-person changes in mindfulness and self-compassion predict enhanced emotional well-being in healthy, but stressed adolescence. Journal of Adolescence. 2016; 49: 204-217.
[361] Hölzel BK, Carmody J, Vangel M, Congleton C, Yerramsetti SM, Gard T, Lazar SW. Mindfulness practice leads to increases in regional brain gray matter density. 2011; 191(1): 36-43. doi: 10.1016/j.pscychresns.2010.08.006. Epub 2010 Nov 10.
[362] Pascoe MC, Thompson DR, Jenkins ZM, Ski CF. Mindfulness mediates the physiological markers of stress: systematic review and meta-analysis. 2017; 95: 156-178. doi: 10.1016/j.jpsychires.2017.08.004. Epub 2017 Aug 23.
[363] Blum L, Blum, R. Resilience in Adolescence in DiClemente, R., Santelli, J., Crosby, R. (Eds) Adolescent Health: Understanding and Preventing Risk Behavior. San Francisco: Jossey-Bass, 2009: 51-76. Citation for entire paragraph.
[364] Siegel DJ. Brainstorm: the power and purpose of the teenage brain. New York: Jeremy P. Tarcher/Penguin Random House LLC, 2015. Print.

[365] Siegel DJ. Brainstorm: the power and purpose of the teenage brain. New York: Jeremy P. Tarcher/Penguin Random House LLC, 2015. Print.
[366] Nurius PS, Green S, Logan-Greene P, Longhi D, Song C. Stress pathways to health inequalities: embedding ACEs within social and behavioral contexts. International Public Health Journal. 2016; 8(2): 241-256.
[367] Blum L, Blum, R. Resilience in Adolescence in DiClemente, R., Santelli, J., Crosby, R. (Eds) Adolescent Health: Understanding and Preventing Risk Behavior. San Francisco: Jossey-Bass, 2009: 51-76.
[368] Bostic JQ, Nevarez MD, Potter MP, Prince JB, Benningfield MM, Aguirre BA. Being present at school: implementing mindfulness in schools. Child and Adolescent Psychiatric Clinics of North America. 2015; 24(2): 245-259.
[369] Centers for Disease Control and Prevention (CDC MMRW). Morbidity and Mortality Weekly Report (MMWR) – Adverse Childhood Experiences Reported by Adults – Five States, 2009. 2010; 59(49): 1609-1636.
[370] Van Der Kolk B. The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma. New York: Penguin Random House LLC, 2014. Print.
[371] Catalano RF, Fagan AA, Gavin LE, Greenberg MT, Irwin CE, Ross DA, Shek DTL. Worldwide application of prevention science in adolescent health. The Lancet. 2012; 379: 1653-1664.
[372] Larkin H, Shields JJ, Anda RF. The Health and Social Consequences of Adverse Childhood Experiences (ACE) across the Lifespan: An Introduction to Prevention and Intervention in the Community. Journal of Prevention and Intervention in the Community. 2012; 40(4): 263-270.
[373] Oral R, Ramirez M, Coohey C, Nakada S, Walz A, Kuntz A, Benoit J, Peek-Asa C. Adverse Childhood Experiences and Trauma Informed Care: The Future of Health Care. Pediatric Research. 2015. [Electronically published ahead of print] http://www.nature.com.ezp.welch.jhmi.edu/pr/journal/vaop/ncurrent/pdf/pr2015197a.pdf
[374] Catalano RF, Fagan AA, Gavin LE, Greenberg MT, Irwin CE, Ross DA, Shek DTL. Worldwide application of prevention science in adolescent health. The Lancet. 2012; 379: 1653-1664. Citation for entire paragraph.
[375] Ergas O. Reconstructing 'Education' through Mindful Attention: Positioning the Mind at the Center of Curriculum and Pedagogy. London, United Kingdom: Palgrave McMillan, 2017. Print.
[376] Belfield C, Bowden B, Klapp A, Levin H, Shand R, Zander S. The Economic Value of Social and Emotional Learning. Center for Benefit-Cost Studies in Education / Teacher's College, Columbia University. 2015. http://blogs.edweek.org/edweek/rulesforengagement/SEL-Revised.pdf
[377] https://casel.org/impact/
[378] Peace in Schools. Website: www.peaceinschools.org.
[379] Bloom SL. Building bridges between trauma-informed and trauma-specific: trauma-responsive programs. Website: http://sanctuaryweb.com/PublicHealth/Trauma-ResponsivePrograms.aspx.
[380] Bloom SL. Building bridges between trauma-informed and trauma-specific: trauma-responsive programs. Website: http://sanctuaryweb.com/PublicHealth/Trauma-ResponsivePrograms.aspx.
[381] Peace in Schools. Peace in Schools Mindful Studies Curriculum. 2014.
[382] Peace in Schools. Peace in Schools Mindful Studies Curriculum. 2014.
[383] https://www.ruralhealthinfo.org/toolkits/health-promotion/1/definition
[384] https://www.cdc.gov/pictureofamerica/pdfs/picture_of_america_prevention.pdf
[385] https://www.ruralhealthinfo.org/toolkits/health-promotion/1/definition
[386] McEwen BS, Seeman TE. Protective and damaging effects of mediators of stress: Elaborating and testing the concept of allostasis and allostatic load. In Socioeconomic status and health in industrial nations. Eds. Adler NE, Marmot M, McEwen BS, Stewart J. New York: New York Academy of Sciences, 1999.
[387] Evans GW, Pilyoung K, Albert H, Tesher HB, Shannis D. Cumulative risk, maternal responsiveness, and allostatic load among adolescents. Developmental Psychology. 2007; 43: 341-351.
[388] Shonkoff JP, Boyce WT, McEwen BS. Neuroscience, molecular biology, and the childhood roots of disparities. Building a new framework for health promotion and disease prevention. Journal of the American Medical Association. 2009; 301: 2252-2259.
[389] King S. A case study of a yoga and meditation intervention in an urban school: a complex web of relationships and resilience in the search for student well-being. Los Angeles: UCLA Electronic Thesis and Dissertations, 2017.
[390] Glanz K, River BK, Viswanath K. Health Behavior and Health Education: Theory, Research, and Practice. Fourth Edition. San Francisco: Jossey-Bass, 2008. Print. Citation for entire paragraph.
[391] Semple RJ, Lee J, Rosa D, Miller LF. A randomized trial of mindfulness-based cognitive therapy for children: Promoting mindful attention to enhance social-emotional resiliency in children. Journal of Child and Family Studies. 2010; 19(2): 218–229.
[392] Zylowska L, Ackerman DL, Yang MH, Futrell JL, Horton NL, Hale TS. Mindfulness meditation training in adults and adolescents with ADHD: A feasibility

study. Journal of Attention Disorders. 2008; 11(6): 737–746.
[393] Napoli M, Krech PR, Holley LC. Mindfulness training for elementary school students: The Attention Academy. Journal of Applied School Psychology. 2005; 21(1): 99–123.
[394] Bögels S, Hoogstad B, van Dun L, de Schutter S, Restifo K. Mindfulness training for adolescents with externalizing disorders and their parents. Behavioural and Cognitive Psychotherapy. 2008; 36(02): 193–209.
[395] van der Oord S, Bögels SM, & Peijnenburg D. The effectiveness of mindfulness training for children with ADHD and mindful parenting for their parents. Journal of Child and Family Studies. 2012; 21(1): 139–147.
[396] Zoogman S, Goldberg SB, Hoyt WT, Miller L. Mindfulness interventions with youth: a meta-analysis. Mindfulness. 2014. Online: DOI 10.1007/s12671-013-0260-4.
[397] Diamond A, Lee K. Interventions shown to aid executive function development in children 4 to 12 years old. Science. 2011; 333(6045): 959-964.
[398] Parker AE, Kupersmidt JB, Mathis ET, et al. The impact of mindfulness education on elementary school students: evaluation of the master mind program. Advances in School Mental Health Promotion. 2014; 7(3): 184–204.
[399] Gallant SN. Mindfulness meditation practice and executive functioning: breaking down the benefit. Consciousness and Cognition. 2016; 40: 116-130.
[400] Diamond A, Lee K. Interventions shown to aid executive function development in children 4 to 12 years old. Science. 2011; 333(6045): 959-964.
[401] Flook L, Smalley SL, Kitil MJ, Galla BM, Kaiser-Greenland S, Locke J. Effects of mindful awareness practices on executive functions in elementary
school children. Journal of Applied School Psychology. 2010; 26(1): 70–95.
[402] Anderson, P. Assessment and development of executive function (EF) during childhood. Child Neuropsychology. 2002; 8(2): 71–82.
[403] Beauchemin J, Hutchins TL, Patterson F. Mindfulness meditation may lesson anxiety, promote social skills, and improve academic performance among adolescents with learning disabilities. Complementary Health Practice Review. 2008; 13(1): 34–45
[404] Brock LL, Rimm-Kaufman SE, Nathanson L, Grimm KJ. The contributions of "hot" and "cool" executive function to children's academic achievement,
learning-related behaviors, and engagement in kindergarten. Early Childhood Research Quarterly. 2009; 24(3): 337–349.
[405] Bull R, Espy KA, Wiebe SA. Short-term memory, working memory, and executive functioning in preschoolers: Longitudinal predictors of mathematical achievement at age 7 years. Developmental Neuropsychology. 2008; 33(3): 205–228.
[406] Greenberg MT, Weissberg RP, O'Brien MU, Zins JE, Fredericks L, Resnik H. Enhancing school-based prevention and youth development through coordinated social, emotional, and academic learning. American Psychologist. 2003; 58(6–7): 466–474.
[407] Steinberg L. Adolescent development and juvenile justice. Annual Review of Clinical Psychology. 2009; 5: 459–485.
[408] Durlak JA, Weissberg RP, Dymnicki AB, Taylor RD, Schellinger KB. The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. Child Development. 2011; 82(1): 405–432.
[409] Barnert ES, Himelstein S, Herbert S, Garcia-Romeu A, Chamberlain LJ. Innovations in practice: Exploring an intensive meditation intervention for incarcerated
youth. Child and Adolescent Mental Health. 2014; 19(1): 69–73.
[410] Bögels S, Hoogstad B, van Dun L, de Schutter S, Restifo K. Mindfulness training for adolescents with externalizing disorders and their parents. Behavioural and Cognitive Psychotherapy. 2008; 36(02): 193–209.
[411] van der Oord S, Bögels SM, Peijnenburg D. The effectiveness of mindfulness training for children with ADHD and mindful parenting for their parents. Journal of Child and Family Studies. 2012; 21(1): 139–147.
[412] Sibinga EM, Perry-Parrish C, Chung SE, Johnson SB, Smith M, Ellen JM. School-based mindfulness instruction for urban male youth: a small randomized controlled trial. Preventive Medicine. 2013; 57(6): 799–801
[413] American Academy of Pediatrics. Mind-body therapies in children and youth: SECTION ON INTEGRATIVE MEDICINE. Pediatrics. 2016; 138(3): e1-e12. DOI: 10.1542/peds.2016-1896.
[414] Sibinga EMS, Kerrigan D, Stewart M, Johnson K, Magyari T, Ellen JM. Mindfulness-based stress reduction for urban youth. Journal of Alternative and Complementary Medicine. 2011; 17(3): 213–218.

[415] Tan, L., & Martin, G. (2013). Taming the adolescent mind: Preliminary report of a mindfulness-based psychological intervention for adolescents with clinical heterogeneous mental health diagnoses. Clinical Child Psychology and Psychiatry. 2013; 18(2): 300–312.
[416] Schonert-Reichl KA, Oberle E, Lawlor MS, Abbott D, Thomson K, Obertlander TF, Diamond A. The effects of a mindfulness-based education program on pre-and early adolescents' well-being and social and emotional competence. Mindfulness. 2010; 1(3): 137–151.
[417] Berger D, Silver E, Stein R. Effects of yoga on inner-city children's well-being: a pilot study. Alternative Therapies in Health and Medicine. 2009; 15: 36–42.
[418] Black DS. Chapter 16: Mindfulness training for children and adolescents: a state-of-the-science review. Handbook of Mindfulness: Theory, Research, and Practice. Ed. Brown KW, Creswell JD, Ryan RM. New York: Guilford Publications, 2014: 283-310.
[419] Sibinga EM, Perry-Parrish C, Chung SE, Johnson SB, Smith M, Ellen JM. School-based mindfulness instruction for urban male youth: a small randomized controlled trial. Preventive Medicine. 2013; 57(6): 799–801
[420] American Academy of Pediatrics. Mind-body therapies in children and youth: SECTION ON INTEGRATIVE MEDICINE. Pediatrics. 2016; 138(3): e1-e12. DOI: 10.1542/peds.2016-1896.
[421] Noggle JJ, Steiner NJ, Minami T, Khalsa SB. Benefits of yoga for psychosocial well-being in a US high school curriculum: a preliminary randomized controlled trial. Journal of Developmental and Behavioral Pediatrics. 2012; 33(3): 193–201.
[422] Biegel GM, Brown KW, Shapiro SL, Schubert CM. Mindfulness-based stress reduction for the treatment of adolescent psychiatric outpatients: A randomized
clinical trial. Journal of Consulting and Clinical Psychology. 2009; 77(5): 855–866.
[423] Zoogman S, Goldberg SB, Hoyt WT, Miller L. Mindfulness interventions with youth: a meta-analysis. Mindfulness. 2014. Online: DOI 10.1007/s12671-013-0260-4.
[424] Ciesla JA, Reilly LC, Dickson KS, Emanuel AS, Updegraff JA. Dispositional mindfulness moderates the effects of stress among adolescents: rumination as a mediator. Journal of Clinical Child and Adolescent Psychology. 2012; 41(6): 760-770.
[425] Brown KW, West AM, Loverich TM, Biegel GM. Assessing adolescent mindfulness: Validation of an adapted mindful attention awareness scale in adolescent normative and psychiatric populations. Psychological Assessment. 2011; 23(4): 1023–1033.
[426] Tan, L., & Martin, G. (2013). Taming the adolescent mind: Preliminary report of a mindfulness-based psychological intervention for adolescents with clinical heterogeneous mental health diagnoses. Clinical Child Psychology and Psychiatry. 2013; 18(2): 300–312.
[427] Whitebird RR, Kreitzer M, Crain AL, Lewis BA, Hanson LR, Enstad CJ. Mindfulness-based stress reduction for family caregivers: a randomized controlled trial. Gerontologist. 2013; 53(4): 676-686.
[428] Kuyken W, Byford S, Taylor RS. Mindfulness-based cognitive therapy to prevent relapse in recurrent depression. Journal of Consulting and Clinical Psychology. 2008; 76(6): 966-978.
[429] Pbert L, Madison JM, Druker S, et al. Effect of mindfulness training on asthma quality of life and lung function: a randomised controlled trial. Thorax. 2012; 67(9): 769-776.
[430] Biegel GM, Brown KW, Shapiro SL, Schubert CM. Mindfulness-based stress reduction for the treatment of adolescent psychiatric outpatients: A randomized
clinical trial. Journal of Consulting and Clinical Psychology. 2009; 77(5): 855–866.
[431] Whitebird RR, Kreitzer M, Crain AL, Lewis BA, Hanson LR, Enstad CJ. Mindfulness-based stress reduction for family caregivers: a randomized controlled trial. Gerontologist. 2013; 53(4): 676-686.
[432] Garland EL, Gaylord SA, Boettiger CA, Howard MO. Mindfulness training modifies cognitive, affective, and physiological mechanisms implicated
in alcohol dependence: results of a randomized controlled pilot trial. Journal of Psychoactive Drugs. 2010; 42(2): 177-192.
[433] Pbert L, Madison JM, Druker S, et al. Effect of mindfulness training on asthma quality of life and lung function: a randomised controlled trial. Thorax.
2012; 67(9): 769-776.
[434] Ferraioli SJ, Harris SL. Comparative effects of mindfulness and skills-based parent training programs for parents of children with autism:
feasibility and preliminary outcome data. Mindfulness. 2013; 4(2): 89-101.
[435] Bostic JQ, Nevarez MD, Potter MP, Prince JB, Benningfield MM, Aguirre BA. Being present at school: implementing mindfulness in schools. Child and Adolescent Psychiatric Clinics of North America. 2015; 24: 245-259.

[436] Gregoski MJ, Barnes VA, Tingen MS, Harshfield GA, Treiber FA. Breathing awareness meditation and LifeSkills Training Programs influence upon ambulatory blood pressure and sodium excretion among African American adolescents. Journal of Adolescent Health. 2010; 48: 59–64. doi:10.1016/j.jadohealth.2010.05.019.
[437] Pace TWW, Negi LT, Dodson-Lavelle B, Ozawa-de Silva B, Reddy SD, Cole SP. Engagement with cognitively-based compassion training is associated with
reduced salivary C-reactive protein from before to after training in foster care program adolescents. Psychoneuroendocrinology. 2013; 38(2): 294–299.
[438] Barnes VA, Treiber FA, Davis H. Impact of transcendental meditation on cardiovascular function at rest and during acute stress in adolescents with high normal blood pressure. Journal of Psychosomatic Research. 2001; 51: 597–605.
[439] Oman D, Shapiro SL, Thoresen CE, Plante TG, Flinders T. Meditation lowers stress and supports forgiveness among college students: a randomized control trial. Journal of American College Health. 2010; 56(5): 569-578.
[440] Shapiro SL, Oman D, Thoresen CE, Plante TG, Flinders T. Cultivating mindfulness: effects on well-being. Journal of Clinical Psychology. 2008; 64(7): 840-862.
[441] Bluth K, Roberson PNE, Gaylord SA. A pilot study of a mindfulness intervention for adolescents and the potential role of self-compassion in reducing stress. Explore. 2015; 11: 292-295.
[442] Broderick PC, Metz S. Learning to BREATHE: A pilot trial of a mindfulness curriculum for adolescents. Advances in School Mental Health Promotion. 2009; 2(1): 35–46.
[443] Himelstein S, Hastings A, Shapiro S, Heery M. Mindfulness training for self-regulation and stress with incarcerated youth: A pilot study. Probation Journal. 2012; 59(2): 151–165.
[444] Kerrigan D, Johnson K, Stewart M, Magyar T, Hutton N, Ellen JM. Perceptions, experiences, and shifts in perspective occurring among urban youth participating in a mindfulness-based stress reduction program. Complementary Therapies in Clinical Practice. 2013; 17(2): 96–101.
[445] Lau N, Hue M. Preliminary outcomes of a mindfulness-based programme for Hong Kong adolescents in schools: Well-being, stress and depressive symptoms. International Journal of Children's Spirituality. 2011; 16(4): 315–330.
[446] Mendelson T, Greenberg MT, Dariotis JK, Gould LF, Rhoades BL, Leaf PJ. Feasibility and preliminary outcomes of a school-based mindfulness intervention for urban youth. Journal of Abnormal Child Psychology. 2010; 38(7): 985–994.
[447] Black DS. Chapter 16: Mindfulness training for children and adolescents: a state-of-the-science review. Handbook of Mindfulness: Theory, Research, and Practice. Ed. Brown KW, Creswell JD, Ryan RM. New York: Guilford Publications, 2014: 283-310.
[448] Greenberg MT, Weissberg RP, O'Brien MU, Zins JE, Fredericks L, Resnik H. Enhancing school-based prevention and youth development through coordinated social, emotional, and academic learning. American Psychologist. 2003; 58(6–7): 466–474.
[449] Steinberg L. Adolescent development and juvenile justice. Annual Review of Clinical Psychology. 2009; 5: 459–485.
[450] Mendelson T, Greenberg MT, Dariotis JK, Gould LF, Rhoades BL, Leaf PJ. Feasibility and preliminary outcomes of a school-based mindfulness intervention for urban youth. Journal of Abnormal Child Psychology. 2010; 38(7): 985–994.
[451] American Academy of Pediatrics. Mind-body therapies in children and youth: SECTION ON INTEGRATIVE MEDICINE. Pediatrics. 2016; 138(3): e1-e12. DOI: 10.1542/peds.2016-1896.
[452] Sibinga EMS, Webb L, Ghazarian SR, Ellen JM. School-based mindfulness instruction: an RCT. Pediatrics. 2016; 137(1): 1-8.
[453] Perry-Parish C, Copeland-Linder N, Webb L, Sibinga EMS. Mindfulness-based approaches for children and youth. Current Problems in Pediatric and Adolescent Health Care. 2016; 46: 172-178.
[454] Shapiro SL, Oman D, Thoresen CE, Plante TG, Flinders T. Cultivating mindfulness: effects on well-being. Journal of Clinical Psychology. 2008; 64(7): 840-862.
[455] Britton WB, Lepp NE, Niles HF, Rocha T, Fisher NE, Gold JS. A randomized controlled pilot trial of classroom based mindfulness meditation compared to an active control condition in sixth-grade children. Journal of School Psychology. 2014; 52(3): 263–278.
[456] Durlak JA, Weissberg RP, Dymnicki AB, Taylor RD, Schellinger KB. The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. Child Development. 2011; 82(1): 405–432.
[457] Hölzel BK, Lazar SW, Gard T, Schuman-Olivier Z, Vago DR, Ott U. How does mindfulness meditation work?: Proposing mechanisms of action from a conceptual and neural perspective. Perspectives on Psychological Science. 2011; 6(6): 537–559.

[458] Black DS. Chapter 16: Mindfulness training for children and adolescents: a state-of-the-science review. Handbook of Mindfulness: Theory, Research, and Practice. Ed. Brown KW, Creswell JD, Ryan RM. New York: Guilford Publications, 2014: 283-310.
[459] Black DS. Chapter 16: Mindfulness training for children and adolescents: a state-of-the-science review. Handbook of Mindfulness: Theory, Research, and Practice. Ed. Brown KW, Creswell JD, Ryan RM. New York: Guilford Publications, 2014: 283-310.
[460] Mendelson T, Greenberg MT, Darifotis JK, Gould LF, Rhoades BL, Leaf PJ. Feasibility and preliminary outcomes of a school-based mindfulness intervention for urban youth. Journal of Abnormal Child Psychology. 2010; 38(7): 985–994.
[461] Coholic D, Eys M, Lougheed S. Investigating the effectiveness of an arts-based and mindfulness-based group program for the improvement of resilience in children in need. Journal of Child and Family Studies. 2012; 21(5): 833–844.
[462] Sibinga EMS, Kerrigan D, Stewart M, Johnson K, Magyari T, Ellen JM. Mindfulness-based stress reduction for urban youth. Journal of Alternative and Complementary Medicine. 2011; 17(3): 213–218.
[463] Tan, L., & Martin, G. (2013). Taming the adolescent mind: Preliminary report of a mindfulness-based psychological intervention for adolescents with clinical heterogeneous mental health diagnoses. Clinical Child Psychology and Psychiatry. 2013; 18(2): 300–312.
[464] Bremner JD, Vythilingam M, Anderson G, Vermetten E, McGlashan T, Heninger G. Assessment of the hypothalamic–pituitary–adrenal axis over a 24-hour
diurnal period and in response to neurophysiological challenges in women with and without childhood sexual abuse and posttraumatic stress disorder. Biological Psychiatry. 2003; 54(7): 710–718.
[465] Heim C, Nemeroff CB. The role of childhood trauma in the neurobiology of mood and anxiety disorders: Preclinical and clinical studies. Biological Psychiatry. 2001; 49(12): 1023–1039.
[466] Tyrka, A. R., Wier, L., Price, L. H., Ross, N., Anderson, G. M., Wilkinson, C. W., et al. Childhood parental loss and adult hypothalamic–pituitary–adrenal function. Biological Psychiatry. 2008; 63(12): 1147–1154.
[467] Van Der Kolk B. The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma. New York: Penguin Random House LLC, 2014. Print.
[468] Hölzel BK, Carmody J, Vangel M, Congleton C, Yerramsetti SM, Gard T, Lazar SW. Stress reduction correlates with structural changes in the amygdala. Social, Cognitive, and Affective Neuroscience. 2010; 5: 11–17.
[469] McEwen BS. In pursuit of resilience: stress, epigenetics, and brain plasticity. The Annals of the New York Academy of Sciences – Issue: Advances in Meditation Research. 2016; 1373: 56-64.
[470] Liehr P, Diaz N. A pilot study examining the effect of mindfulness on depression and anxiety for minority children. Archives of Psychiatric Nursing. 2010; 24(1): 69–71.
[471] Biegel GM, Brown KW, Shapiro SL, Schubert CM. Mindfulness-based stress reduction for the treatment of adolescent psychiatric outpatients: A randomized
clinical trial. Journal of Consulting and Clinical Psychology. 2009; 77(5): 855–866.
[472] Semple RJ, Lee J, Rosa D, Miller LF. A randomized trial of mindfulness-based cognitive therapy for children: Promoting mindful attention to enhance social-emotional resiliency in children. Journal of Child and Family Studies. 2010; 19(2): 218–229.
[473] Sibinga EMS, Kerrigan D, Stewart M, Johnson K, Magyari T, Ellen JM. Mindfulness-based stress reduction for urban youth. Journal of Alternative and Complementary Medicine. 2011; 17(3): 213–218.
[474] Tan, L., & Martin, G. (2013). Taming the adolescent mind: Preliminary report of a mindfulness-based psychological intervention for adolescents with clinical heterogeneous mental health diagnoses. Clinical Child Psychology and Psychiatry. 2013; 18(2): 300–312.
[475] Craner JR, Sawchuk CN, Smyth KT. Outcomes of a 6-week cognitive-behavioral and mindfulness group intervention in primary care. Families, Systems, and Health. 2016; 34(3): 250-259.
[476] Lee SH, Ahn SC, Lee YJ, Choi TK, Yook KH, Suh SY. Effectiveness of a meditation-based stress management program as an adjunct to pharmacotherapy in patients with anxiety disorder. Journal of Psychosomatic Research. 2007; 62(2): 189-195.
[477] Hoge EA, Bui E, Marques L. Randomized controlled trial of mindfulness meditation for generalized anxiety disorder: effects on anxiety and stress reactivity. Journal of Clinical Psychiatry. 2013; 74(8): 786-792.
[478] Goyal M, Singh S, Sibinga EMS, Gould NF, Rowland-Seymour A, Sharma R, Berger Z, Sleicher D, Maron DD, Shihab HM, Ranasinghe PD, Linn S, Saha S, Bass EB, Haythornthwaite JA. Meditation programs for psychological stress: a systematic review and meta-analysis. JAMA Internal Medicine. 2014; 174(3): 357-368.
[479] Gaylord SA, Palsson OS, Garland EL. Mindfulness training reduces the severity of irritable bowel syndrome in women: results of a randomized controlled trial. American Journal of Gastroenterology. 2011; 106(9): 1678-1688.

[480] Schmidt S, Grossman P, Schwarzer B, Jena S, Naumann J, Walach H. Treating fibromyalgia with mindfulness-based stress reduction: results from a 3-armed randomized controlled trial. Pain. 2011; 152(2): 361-369.
[481] Hilt LM, Pollak SD. Getting out of rumination: Comparison of three brief interventions in a sample of youth. Journal of Abnormal Child Psychology. 2012; 40(7): 1157–1165.
[482] Muris P, Roelofs J, Meesters C, Boomsma P. Rumination and worry in nonclinical adolescents. Cognitive Therapy and Research. 2004; 28(4): 539–554.
[483] Biegel GM, Brown KW, Shapiro SL, Schubert CM. Mindfulness-based stress reduction for the treatment of adolescent psychiatric outpatients: A randomized
clinical trial. Journal of Consulting and Clinical Psychology. 2009; 77(5): 855–866.
[484] Liehr P, Diaz N. A pilot study examining the effect of mindfulness on depression and anxiety for minority children. Archives of Psychiatric Nursing. 2010; 24(1): 69–71.
[485] Sibinga EMS, Webb L, Ghazarian SR, Ellen JM. School-based mindfulness instruction: an RCT. Pediatrics. 2016; 137(1): 1-8.
[486] Williams MG, Crane C, Barnhofer T, Brennan K, Duggan DS, Fennell MJV, Hackmann A, Krusche A, Muse K, Von Rohr IR, Shah D, Crane RS, Eames C, Jones M, Radford S, Silverton S, Sun Y, Weatherley-Jones E, Whitaker CJ. Mindfulness-based cognitive therapy for preventing relapse in recurrent depression: a randomized dismantling trial. Journal of Consulting and Clinical Psychology. 2014; 82(2): 275-286.
[487] Henderson DX, DeCuir-Gunby J, Gill V. "It *really* takes a village": a socio-ecological model of resilience for prevention among disadvantaged ethnic minority youth. Journal of Primary Prevention. 2016; 37: 469-485.
[488] Whitebird RR, Kreitzer M, Crain AL, Lewis BA, Hanson LR, Enstad CJ. Mindfulness-based stress reduction for family caregivers: a randomized controlled trial. Gerontologist. 2013; 53(4): 676-686.
[489] Goyal M, Singh S, Sibinga EMS, Gould NF, Rowland-Seymour A, Sharma R, Berger Z, Sleicher D, Maron DD, Shihab HM, Ranasinghe PD, Linn S, Saha S, Bass EB, Haythornthwaite JA. Meditation programs for psychological stress: a systematic review and meta-analysis. JAMA Internal Medicine. 2014; 174(3): 357-368.
[490] Chiesa A, Malinowski P. Mindfulness-based approaches: are they all the same? Journal of Clinical Psychology. 2011; 67(4): 404-424.
[491] Craner JR, Sawchuk CN, Smyth KT. Outcomes of a 6-week cognitive-behavioral and mindfulness group intervention in primary care. Families, Systems, and Health. 2016; 34(3): 250-259.
[492] Poppelaars M, Tak YR, Lichtwarck-Aschoff A, Engels RCME, Lobel A, Merry SN, Lucassen MFG, Granic I. A Randomized controlled trial comparing two cognitive-behavioral programs for adolescent girls with subclinical depression: a school-based program (Op Volle Kracht) and a computerized program (SPARX). Behaviour Research and Therapy. 2016; 80: 33-42.
[493] Shirk SR, DePrince AP, Crisostomo PS. Cognitive behavioral therapy for depressed adolescents exposed to interpersonal trauma: an initial effectiveness trial. American Psychological Association. 2013; 51(1): 167-179.
[494] Brock LL, Rimm-Kaufman SE, Nathanson L, Grimm KJ. The contributions of "hot" and "cool" executive function to children's academic achievement,
learning-related behaviors, and engagement in kindergarten. Early Childhood Research Quarterly. 2009; 24(3): 337–349.
[495] Bull R, Espy KA, Wiebe SA. Short-term memory, working memory, and executive functioning in preschoolers: Longitudinal predictors of mathematical achievement at age 7 years. Developmental Neuropsychology. 2008; 33(3): 205–228.
[496] Schonert-Reichl KA, Oberle E, Lawlor MS, Abbott D, Thomson K, Obertlander TF, Diamond A. The effects of a mindfulness-based education program on pre-and early adolescents' well-being and social and emotional competence. Mindfulness. 2010; 1(3): 137–151.
[497] Roeser RW, Pinela C. Mindfulness and compassion training in adolescence: A developmental contemplative science perspective.
New Directions for Youth Development. 2014; 9–30. http://dx.doi.org/10.1002/yd.20094.
[498] Durlak JA, Weissberg RP, Dymnicki AB, Taylor RD, Schellinger KB. The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. Child Development. 2011; 82(1): 405–432.
[499] Oman D, Shapiro SL, Thoresen CE, Plante TG, Flinders T. Meditation lowers stress and supports forgiveness among college students: a randomized control trial. Journal of American College Health. 2010; 56(5): 569-578.
[500] Hayes SC, Luoma JB, Bond FW, Masuda A, Lillis J. Acceptance and commitment therapy: model, processes, and outcomes. Behaviour Research and Therapy. 2006; 44: 1-25.
[501] Schonert-Reichl KA, Lawlor MS. The effects of a mindfulness-based education program on pre- and early adolescents' wellbeing and social and emotional competence. Mindfulness 2010; 1(3): 137–151.

[502] Napoli M, Krech PR, Holley LC. Mindfulness training for elementary school students: The Attention Academy. Journal of Applied School Psychology. 2005; 21(1): 99–123.
[503] Sibinga EMS, Kerrigan D, Stewart M, Johnson K, Magyari T, Ellen JM. Mindfulness-based stress reduction for urban youth. Journal of Alternative and Complementary Medicine. 2011; 17(3): 213–218.
[504] Tan, L., & Martin, G. (2013). Taming the adolescent mind: Preliminary report of a mindfulness-based psychological intervention for adolescents with clinical heterogeneous mental health diagnoses. Clinical Child Psychology and Psychiatry. 2013; 18(2): 300–312.
[505] Durlak JA, Weissberg RP, Dymnicki AB, Taylor RD, Schellinger KB. The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. Child Development. 2011; 82(1): 405–432.
[506] Black DS. Chapter 16: Mindfulness training for children and adolescents: a state-of-the-science review. Handbook of Mindfulness: Theory, Research, and Practice. Ed. Brown KW, Creswell JD, Ryan RM. New York: Guilford Publications, 2014: 283-310.
[507] Sibinga EMS, Kerrigan D, Stewart M, Johnson K, Magyari T, Ellen JM. Mindfulness-based stress reduction for urban youth. Journal of Alternative and Complementary Medicine. 2011; 17(3): 213–218. Online: doi:10.1089/acm.2009.0605.
[508] Tan, L., & Martin, G. (2013). Taming the adolescent mind: Preliminary report of a mindfulness-based psychological intervention for adolescents with clinical heterogeneous mental health diagnoses. Clinical Child Psychology and Psychiatry. 2013; 18(2): 300–312.
[509] Sibinga EMS, Kerrigan D, Stewart M, Johnson K, Magyari T, Ellen JM. Mindfulness-based stress reduction for urban youth. Journal of Alternative and Complementary Medicine. 2011; 17(3): 213–218. Online: doi:10.1089/acm.2009.0605.
[510] Chan CS, Rhodes JE, Howard WJ, Lowe SR, Schwartz SEO, Herrera C. Pathways of influence in school-based mentoring: the mediating role of parent and teacher relationships. Journal of School Psychology. 2013; 51(1): 129-142. doi:10.1016/j.jsp.2012.10.001.
[511] Siegel DJ. Brainstorm: the power and purpose of the teenage brain. New York: Jeremy P. Tarcher/Penguin Random House LLC, 2015.
[512] Van Der Kolk B. The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma. New York: Penguin Random House LLC, 2014. Print.
[513] McEwen BS. In pursuit of resilience: stress, epigenetics, and brain plasticity. The Annals of the New York Academy of Sciences – Issue: Advances in Meditation Research. 2016; 1373: 56-64.
[514] Chiesa A, Calati R, Serretti A. Does mindfulness training improve cognitive abilities? A systematic review of neuropsychological findings. Clinical Psychology Review. 2011; 31: 449-464.
[515] Keng S, Smoski MJ, Robins CJ. Effects of mindfulness on psychological health: a review of empirical studies. 2011; 31: 1041-1056.
[516] Bluett EJ, Homan KJ, Morrison KL, Levin ME, Twohig MP. Acceptance and commitment therapy for anxiety and OCD spectrum disorders: an empirical review. Journal of Anxiety Disorders. 2014; 28: 612-624.
[517] Cavanaugh K, Strauss C, Forder L, Jones F. Can mindfulness and acceptance be learnt by self-help?: A systematic review and meta-analysis of mindfulness and acceptance-based self-help interventions.
[518] Wanden-Berghe RG, Sanz-Valero J, Wanden-Berghe C. The application of mindfulness to eating disorders treatment: a systematic review. 2011; 19: 34-48.
[519] Korotana LM, Dobson KS, Pusch D, Josephson T. A review of primary care interventions to improve health outcomes in adult survivors of adverse childhood experiences. Clinical Psychology Review. 2016; 46: 59-90.
[520] Burke CA. Mindfulness-based approaches with children and adolescents: a preliminary review of current research in an emergent field. Journal of Child and Family Studies. 2010. DOI 10.1007/s108826-009-9287-x.
[521] Tan BG. A critical review of adolescent mindfulness-based programs. Clinical Child Psychology and Psychiatry. 2016; 21(2): 193-207.
[522] Simkin DR, Black NB. Meditation and mindfulness in clinical practice. Child and Adolescent Psychiatric Clinics of North America. 2014; 23(3): 487-534. doi: 10.1016/j.chc.2014.03.002.
[523] Serwacki ML, Cooke-Cottone C. Yoga in the schools: a systematic review of the literature. International Journal of Yoga Therapy. 2012; 22: 101-109.
[524] Ferreira-Vorkapic C, Feitoza JM, Marchioro M, Simoes J, Kozasa E, Telles S. Are there benefits from teaching yoga at schools? A systematic review of randomized control trials of yoga-based interventions. Evidence-based Complementary and Alternative Medicine. 2015: 1-27.
[525] Black DS, Milam J, Sussman S. Sitting-meditation interventions among youth: a review of treatment efficacy. Pediatrics. 2009; DOI: 10.1542/peds.2008-3434: e532-541.

[526] Blake MJ, Sheeber LB, Youssef GJ, Raniti MB, Allen NB. Systematic review and meta-analysis of adolescent cognitive-behavioral sleep interventions. Clinical Child and Family Psychological Review. 2017. DOI 10.1007/s10567-017-0234-5.
[527] Jones P, Blunda M, Biegel G, Carlson LE, Biel M, Wiener L. Can mindfulness-based interventions help adolescents with cancer? Psychooncology. 2013; 22(9): doi.10.1002/pon.3251.
[528] Kohut SA, Stinson J, Davies-Chalmers C, Ruskin D, van Wyk M. Mindfulness-based interventions in clinical samples of adolescents with chronic illness: a systematic review. Journal of Alternative and Complementary Medicine. 2017; 0(0): 1-9.
[529] Ortiz R, Sibinga EM. The role of mindfulness in reducing the adverse effects of childhood stress and trauma. Children. 2017; 4(16): 1-19. Doi: 10.3390/children4030016.
[530] Tan BG. A critical review of adolescent mindfulness-based programs. Clinical Child Psychology and Psychiatry. 2016; 21(2): 193-207. Citation for entire paragraph.
[531] Ortiz R, Sibinga EM. The role of mindfulness in reducing the adverse effects of childhood stress and trauma. Children. 2017; 4(16): 1-19. Doi: 10.3390/children4030016.
[532] Shapiro SL, Carlson LE, Astin JA, Feedman B. Mechanisms of mindfulness. Journal of Clinical Psychology. 2006; 62(3): 373-386.
[533] Lorde A. The master's tools will never dismantle the master's house. New York: Penguin Books/Random House, 2017.
[534] Schiff M, Plotnikova M, Dingle K, Williams GM, Najman J, Clavarino A. Does adolescent's exposure to parental intimate partner conflict and violence predict psychological distress and substance use in young adulthood? A longitudinal study. Child Abuse Neglect. 2014; 38(12): 1945-54.
[535] Nuttbrock L, Bockting W, Mason M, Hwahng S, Rosenblum A, Macri M, & Becker J. A further assessment of Blanchard's Typology of Homosexual Versus Non-Homosexual or Autogynephilic Gender Dysphoria. Archives of Sexual Behavior. 2011; 40: 247–257.
[536] Hwahng SJ, Nuttbrock L. Adolescent gender-related abuse, androphilia, and HIV risk among transfeminine people of color in New York City. Journal of Homosexuality. 2014; 61(5): 691-713. doi: 10.1080/00918369.2014.870439.
[537] Nuttbrock L, Bockting W, Mason M, Hwahng S, Rosenblum A, Macri M, & Becker J. A further assessment of Blanchard's Typology of Homosexual Versus Non-Homosexual or Autogynephilic Gender Dysphoria. Archives of Sexual Behavior. 2011; 40: 247–257.
[538] Hwahng SJ, Nuttbrock L. Adolescent gender-related abuse, androphilia, and HIV risk among transfeminine people of color in New York City. Journal of Homosexuality. 2014; 61(5): 691-713. doi: 10.1080/00918369.2014.870439.
[539] Slack KS, Font, SA, Jones J. The complex interplay of adverse childhood experiences, race, and income. 2017; 42(1): e24-e31. doi: 10.1093/hsw/hlw059.
[540] Kenney MK, Singh GK. Adverse childhood experiences among American Indian/Alaska Native children: the 2011-2012 National Survey of Children's Health. Scientifica. 2016. 7424239. doi: 10.1155/2016/7424239. Epub 2016 Jul 26.
[541] Schilling EA, Aseltine RH, Gore S. Adverse childhood experiences and mental health in young adults: a longitudinal survey. BMC Public Health. 2007; 7:30. doi:10.1186/1471-2458-7-30.
[542] Hwahng SJ, Nuttbrock L. Adolescent gender-related abuse, androphilia, and HIV risk among transfeminine people of color in New York City. Journal of Homosexuality. 2014; 61(5): 691-713. doi: 10.1080/00918369.2014.870439.
[543] Bethell C, Gombojav N, Solloway M, Wissow L. Adverse childhood experiences, resilience and mindfulness-based approaches: common denominator issues for children with emotional, mental, or behavioral problems. Child and Adolescent Psychiatric Clinics of North America. 2016; 25(2): 139-56.
[544] Giovanelli A, Reynolds AJ, Mondi CF, Ou S. Adverse childhood experiences and adult well-being in a low-income, urban cohort. Pediatrics. 2016; 137(4): 1-13.
[545] Steckler A, Linnan L. Process Evaluation for Public Health Interventions and Research: An Overview. San Francisco, CA: Jossey-Bass/John Wiley & Sons, Inc., 2002. Print.
[546] "Population and Housing Occupancy Status: 2010 – United States – Metropolitan Statistical Area; and for Puerto Rico". 2010 United States Census. United States Census Bureau, Population Division. April 14, 2011. Retrieved 12 July 2011.
[547] US Census Bureau. QuickFacts Portland City, Oregon. https://www.census.gov/quickfacts/fact/table/portlandcityoregon/AGE135218#AGE135218

[548] Census Equity Fund of Oregon: Funding an Equitable 2020 Census Count. https://www.unitedway-pdx.org/census-equity-fund-oregon-funding-equitable-2020-census-count
[549] Tan BG. A critical review of adolescent mindfulness-based programs. Clinical Child Psychology and Psychiatry. 2016; 21(2): 193-207.
[550] Portland Public Schools Facts and Figures. Website: http://www.pps.net/cms/lib8/OR01913224/Centricity/Domain/207/2015-16%20School%20Profiles.pdf.
[551] Portland Public Schools Facts and Figures. Website: http://www.pps.net/domain/265. Accessed 15 May 2017. Citation for entire paragraph.
[552] Portland Public Schools, Language Access Services. https://www.pps.net/domain/43
[553] Basch CE, Sliepcevich EM, Gold RS, Duncan DF, Kolbe LJ. Avoiding type III errors in health education program evaluations: a case study. Health Education Quarterly. 1985; 12(4): 315-331.
[554] Kemp L. Adaptation and fidelity. A recipe analogy for achieving both in population scale implementation. Prevention Science. 2017; 17: 429-438.
[555] *Citation for entire section.* Maxwell JA. Qualitative Research Design: AN Interactive Approach. Second Edition. Applied Social Research Methods Series/Volume 41. Sage Publications, Inc. 2005.
[556] Braun, V. and Clarke, V. (2006) Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2): 77-101. ISSN 1478-0887
[557] The SAGE Encyclopedia of Qualitative Research Methods. Ed. Given LM, Saumure, et al. Thousand Oaks, CA: SAGE Publications, 2008.
[558] Glaser BG, Strauss AL. The Discovery of Grounded Theory: Strategies for Qualitative Research. Chicago: Aldine Publishing Company, 1967.
[559] Tan BG. A critical review of adolescent mindfulness-based programs. Clinical Child Psychology and Psychiatry. 2016; 21(2): 193-207.
[560] Coe R. It's the effect size, stupid: what effect size is and why it is important. University of Durham School of Education. Website: https://www.leeds.ac.uk/educol/documents/00002182.htm.
[561] Napoli M, Krech PR, Holley LC. Mindfulness Training for Elementary School Students: The Attention Academy. Journal of Applied School Psychology. 2005; 21(1): 99-125.
[562] Burke CA. Mindfulness-based approaches with children and adolescents: a preliminary review of current research in an emergent field. Journal of Child and Family Studies. 2010. DOI 10.1007/s108826-009-9287-x.
[563] Burke CA. Mindfulness-based approaches with children and adolescents: a preliminary review of current research in an emergent field. Journal of Child and Family Studies. 2010. DOI 10.1007/s108826-009-9287-x.
[564] Napoli M, Krech PR, Holley LC. Mindfulness Training for Elementary School Students: The Attention Academy. Journal of Applied School Psychology. 2005; 21(1): 99-125.
[565] Mills C. Decolonizing global mental health: the psychiatrization of the majority world. Routledge Taylor & Francis Group: London and New York, 2014.
[566] Weng, H.Y. (2018, June). Contemplative Neuroscience through the lens of diversity and social justice. Plenary faculty talk presented at the Mind and Life Summer Research Institute, Garrison, NY. Developed by Dr. Weng in conjunction with the East Bay Meditation Center.
[567] https://habitslab.umbc.edu/urica/
[568] https://www.cdc.gov/violenceprevention/childabuseandneglect/acestudy/about.html
[569] Finkelhor D, Shattuck A, Turner H, Hamby S. Improving the Adverse Childhood Experiences Study Scale. Journal of the American Medical Association Pediatrics. 2013;167(1):70–75
[570] Cronholm PF, Forke CM, Wade R, Bair-Merritt MH, Davis M, Harkins-Schwarz M, Pachter LM, Fein JA. Adverse childhood experiences: expanding the concept of adversity. American Journal of Preventive Medicine. 2015; 49(3): 354-361.
[571] Mersky JP, Janczewski CE, Topitzes J. Rethinking the measurement of adversity: moving toward second-generation research on adverse childhood experiences. Child Maltreatment. 2017; 22(1): 58-68.
[572] Bethell C, Gombojav N, Solloway M, Wissow L. Adverse childhood experiences, resilience and mindfulness-based approaches: common denominator issues for children with emotional, mental, or behavioral problems. Child and Adolescent Psychiatric Clinics of North America. 2016; 25(2): 139-56.
[573] Giovanelli A, Reynolds AJ, Mondi CF, Ou S. Adverse childhood experiences and adult well-being in a low-income, urban cohort. Pediatrics. 2016; 137(4): 1-13.
[574] Brockie TN, Dana-Sacco G, Wallen GR, Wilcox HC, Campbell JC. The Relationship of Adverse Childhood Experiences to PTSD, Depression, Poly-Drug Use and Suicide Attempt in Reservation-Based Native American Adolescents and Young Adults. American Journal of Community Psychology. 2015; 55(3-4): 411-421.

[575] Ullmann RK, Sleator EK, et al. ACTeRS Teacher, Parent, and Self Report Forms Manual. Additional information: https://www.wpspublish.com/acters-add-h-comprehensive-teachers-rating-scale-second-edition.
[576] Tsheringla S, Simon A, Russell PS, Shankar S, Russell S, Mammen P, Nair MK.ADD-H Comprehensive Teacher's Rating Scale (ACTeRS) : a measure for attention deficit hyperactivity disorder among children with intellectual disability in India. Indian Journal of Pediatrics. 2014; 81(S2): S161-S164.
[577] (Citation for this sentence and remainder of paragraph) Giogia GA, Isquith PK, Guy SC, Kentworthy L. BRIEF2 Behavior Rating Inventory of Executive Function, Section Edition. PAR: Lutz, Florida, 2015.
[578] Raes F, Pommier E, Neff KD, Van Gucht. Construction and factorial validation of a short form of the Self-Compassion Scale. Clinical Psychology and Psychotherapy. 2011; 18: 250-255.
[579] Cohen S. Perceive Stress Scale. Mind Garden, Inc. 1994.
[580] Nordin M, Nordin S. Psychometric evaluation and normative data of the Swedish version of the 10-item perceived stress scale. Scandinavian Journal of Psychology. 2014; 54: 502-507.
[581] Brief COPE. Charles S. Carver/College of Arts and Sciences – Psychology. Website: https://local.psy.miami.edu/faculty/ccarver/sclBrCOPE.phtml.
[582] Carver CS. You want to measure coping but your protocol's too long: consider the Brief COPE. International Journal of Behavioral Medicine. 1997; 4(1): 92-100.
[583] Kato T. Frequently used coping scales: A meta-analysis. Stress Health. 2015; 31: 315-323.
[584] Gross JJ, John OP. Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. Journal of Personality and Social Psychology. 2013; 85: 348-362.
[585] Spitzer RL, Kroenke K, Williams JB, et al. A brief measure for assessing generalized anxiety disorder: the GAD-7. Arch Intern Med. 2006; 166(10): 1092-97.
[586] Swinson RP. The GAD-7 scale was accurate for diagnosing generalised anxiety disorder. Evid Based Med. 2006; 11(6): 184.
[587] Rutter LA, Brown TA. Psychometric properties of the Generalized Anxiety Disorder Scale-7 (GAD-7) in outpatients with anxiety and mood disorders. 2017; 39(1): 140-46.
[588] Global Early Adolescent Study (GEAS) Website: https://www.geastudy.org/.
[589] https://www.childtrends.org/research/research-by-topic/positive-indicators-project/social-competence
[590] Lee RM, Robbins SB. Measuring belongingness: The Social Connectedness and the Social Assurance Scales. Journal of Counseling Psychology. 1995; 42(2): 232-241.
[591] Pommier EA. The compassion scale. Dissertation Abstracts International Section A: Humanities and Social Sciences. 2011; 7: 1174.
[592] Aquilino WS. Privacy effects on self-reported drug use: interactions with survey mode and respondents' characteristics. NIDA Res Monogr 1997; 167: 383–415.
[593] Duffer AP, Lessler JT, Weeks MF, Mosher WD. Impact of Incentives and Interviewing Modes: Results from the National Survey of Family Growth Cycle V Pretest. Conference Proceedings: Health Survey Methods. Hyattsville, MD: National Center for Health Statistics, 1996.
[594] Bloom DE. Technology, experimentation, and the quality of survey data. Science. 1998; 280:847–48.
[595] Turner C, Ku L, Rogers SM et al. Adolescent sexual behavior, drug use, and violence: increased reporting with computer survey technology. Science. 1998; 280: 867–73.
[596]Des Jarlais DC, Paone D, Milliken J et al. Audio-computer interviewing to measure risk behaviour for HIV among injection drug users: a quasi-randomized trial. Lancet. 1999; 353: 1657–61.
[597] Kissinger P, Rice J, Farley T et al. Application of computer-assisted interviews to sexual behavior research. Am J Epidemiology. 1999; 149: 950–54.
[598] The Minitab Blog. Choosing between a parametric test and non-parametric test. Website: http://blog.minitab.com/blog/adventures-in-statistics-2/choosing-between-a-nonparametric-test-and-a-parametric-test
[599] Mendelson T, Tandon SD, O'Brennan L, Leaf PJ, Ialongo. NS. Brief report: moving prevention into schools: the impact of a trauma-informed school-based intervention. Journal of Adolescence. 2015; 43: 142-147. Citation for entire paragraph.
[600] Burke CA. Mindfulness-based approaches with children and adolescents: a preliminary review of current research in an emergent field. Journal of Child and Family Studies. 2010. DOI 10.1007/s108826-009-9287-x.
[601] Lucas RM, McMichael AJ. Association or causation: evaluating links between "environment and disease". Bulletin of the World Health Organization. 2005; 83(10): 792-795. Website: http://www.who.int/bulletin/volumes/83/10/792.pdf.
[602] Organizational Research Services/Annie E. Casey Foundation. Theory of change: a practical tool for action, results, and learning. 2004.

[603] Harries E, Hodgson L, Noble J. Creating your theory of change: NPC's practical guide. 2014
[604] Nesta/The Social Innovation Partnership. Guidance for developing a theory of change for your programme.
[605] Nesta/The Social Innovation Partnership. Guidance for developing a theory of change for your programme.
[606] Organizational Research Services/Annie E. Casey Foundation. Theory of change: a practical tool for action, results, and learning. 2004.
[607] Nesta/The Social Innovation Partnership. Guidance for developing a theory of change for your programme.
[608] Salimi Y, Shahandeh K, Malekafzali H, Loori N, Kheiltash A, Jamshidi E, Frouzan AS, Majdzadeh R. Is Community-based Participatory Research (CBPR) useful? A systematic review on papers in a decade. Int J Prev Med. 2012; 3(6): 386-393.
[609] Maxwell JA. Qualitative Research Design: AN Interactive Approach. Second Edition. Applied Social Research Methods Series/Volume 41. Sage Publications, Inc. 2005.
[610] Washington H. Medical apartheid: the dark history of medical experimentation on Black Americans form colonial times to the present. New York: Anchor Books/Random House, Inc., 2006.
[611] Unequal treatment: confronting racial and ethnic disparities in healthcare. Ed. Smedley BD, Stith AY, Nelson AR./Board on Health Sciences Policy—Institute of Medicine of the National Academies. Washington, DC: The National Academies Press, 2011.
[612] Sams J. Dancing the dream: the seven sacred paths of human transformation. New York: HarperCollins, 1998.
[613] PPS October 1st, 2019 Enrollment – Summary Comparison. https://www.pps.net/cms/lib/OR01913224/Centricity/Domain/207/Enrollment%20Summary%202019-20.pdf
[614] Portland Public Schools – Enrollment Characteristics, October 2018. Website: https://www.pps.net/cms/lib/OR01913224/Centricity/Domain/207/School%20Characteristics%20-%20SpEd_TAG_LEP_Gender%202018-19.pdf.
[615] Portland Public Schools – Enrollment Summary by Race and Ethnicity, October 2018. Website: https://www.pps.net/cms/lib/OR01913224/Centricity/Domain/207/Enrollment%20by%20Race%20and%20School%202018-19.pdf
[616] Meenwijk EL, Sevelius JM. Transgender population size in the United States: a meta-regression of population-based probability samples. AJPH Transgender Health. 2017; 107(2): e1-e8.
[617] Webb A, Matsund E, Budge S, Krishnan M, Balsam K. Non-binary gender identities fact sheet. Society for the Psychology of Sexual Orientation and Gender Diversity—APA Division 44. Website: https://www.apadivisions.org/division-44/resources/advocacy/non-binary-facts.pdf.
[618] Rider GN, McMorris BJ, Gower AL, Coleman E, Eisenberg ME. Health and care utilization of transgender and gender non-conforming youth: a population-based study. Pediatrics. 2018; 141(3): e20171683; DOI: https://doi.org/10.1542/peds.2017-1683.
[619] LGBT Data and Demographics. UCLA School of Law, Williams Institute. Website: https://williamsinstitute.law.ucla.edu/visualization/lgbt-stats/?topic=LGBT#density.
[620] Robert Wood Johnson Foundation. The truth about ACEs infographic. Website: https://www.rwjf.org/en/library/infographics/the-truth-about-aces.html.
[621] Robert Wood Johnson Foundation. The truth about ACEs infographic. Website: https://www.rwjf.org/en/library/infographics/the-truth-about-aces.html.
[622] Peace in Schools. Overview for movement teachers manual. 2018; 1-28.
[623] Himelstein S. A mindfulness-based approach to working with high-risk adolescents. New York: Routledge, 2013.
[624] Zenner C, Herrnleben-Kurz S, Walach H. Mindfulness-based interventions in schools—a systematic review and meta-analysis. Frontiers in Psychology. 2014; 5: 603. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4075476/
[625] Shapiro SL, Carlson LE, Astin JA, Freedman B. Mechanisms of mindfulness. Journal of Clinical Psychology. 2006; 62(3): 373-386.
[626] Magee RV. The inner work of racial justice: healing ourselves and transforming our communities through mindfulness. Canada: Tarcher Perigee/Penguin Random House LLC, 2019.
[627] Salter PS, Adams G. Provisional strategies for decolonizing consciousness. Antiracism Inc. Chapter 19; 229-323. doi: 10.21983/P3.0250.1.22.
[628] Magee R. The inner work of racial justice: healing ourselves and transforming our communities through mindfulness. New York: TarcherPerigree/Penguin Random House LLC, 2019.
[629] Johnson MC. Skill in action: radicalizing your yoga practice to create a just world. Portland, OR: Radical Transformation Media, 2017.
[630] Shakur A. Assata: an autobiography. Chicago, IL: L. Hill, 1987.
[631] Website: www.youth.gov | https://www.youth.gov/img/ymh_infographic.png | https://www.youth.gov/youth-topics/youth-mental-health/prevalance-mental-health-disorders-among-youth.

[632] Cope S. Yoga and the quest for true self. New York: Bantam Books, 1999.
[633] Menakem R. My grandmother's hands: Racialized trauma and the pathway to mending our hearts and bodies. Las Vegas, NV: Central Recovery Press, 2017.
[634] Steeger MC, Cook EC, Connell CM. The interactive effects of stressful family life events and cortisol reactivity on adolescent externalizing and internalizing behaviors. Child Psychiatry Hum Dev. 2017; 48(20): 225-234.
[635] Merikangas KR, He J, Burstein M, Swanson SA, Avenevoli S, Cui L, Benjet C, Georgiades K, Swendsen J. Lifetime prevalence of mental disorders in US adolescents: results from the National Comorbidity Survey Replication-Adolescent Supplement (NCS-a) J Am Acad Child Adolescent Psychiatry. 2010; 49: 980–989. doi: 10.1016/j.jaac.2010.05.017.
[636] Rescorla L, Achenbach T, Ivanova MY, Dumenci L, Almqvist F, Bilenberg N, Bird H, Chen W, Dobrean A, Döpfner M. et al. Behavioral and emotional problems reported by parents of children ages 6 to 16 in 31 societies. J Emot Behav Disord. 2007; 15: 130–142. doi: 10.1177/10634266070150030101.
[637] Shapiro SL, Carlson LE, Astin JA, Feedman B. Mechanisms of mindfulness. Journal of Clinical Psychology. 2006; 62(3): 373-386.
[638] Mendelson T, Greenberg MT, Darifotis JK, Gould LF, Rhoades BL, Leaf PJ. Feasibility and preliminary outcomes of a school-based mindfulness intervention for urban youth. Journal of Abnormal Child Psychology. 2010; 38(7): 985–994.
[639] Shapiro SL, Carlson LE, Astin JA, Feedman B. Mechanisms of mindfulness. Journal of Clinical Psychology. 2006; 62(3): 373-386.
[640] Mendelson T, Greenberg MT, Darifotis JK, Gould LF, Rhoades BL, Leaf PJ. Feasibility and preliminary outcomes of a school-based mindfulness intervention for urban youth. Journal of Abnormal Child Psychology. 2010; 38(7): 985–994.
[641] Giogia GA, Isquith PK, Guy SC, Kentworthy L. BRIEF2 Behavior Rating Inventory of Executive Function, Section Edition. PAR: Lutz, Florida, 2015.
[642] Yang L. Awakening together: the spiritual practice of inclusivity and community. Somerville, MA: Wisdom Publications, 2017.
[643] Marysville Website: https://www.pps.net/Domain/141. Accessed 13 June 2020.
[644] Sunnyside Environmental School Website: https://www.pps.net/sunnyside. Accessed 13 June 2020.
[645] MindUP Website: https://mindup.org/.
[646] King S. "The Science of Social Justice: a generative field of collective healing." Science and Non-Duality (SAND) Conference. 26 Oct. 2019. Website: https://www.scienceandnonduality.com/event/sand19-us#speakers.
[647] King S. "The Science of Social Justice: a generative field of collective healing." Science and Non-Duality (SAND) Conference. 26 Oct. 2019. Website: https://www.scienceandnonduality.com/event/sand19-us#speakers.
[648] Johnson MC. Skill in action: radicalizing your yoga practice to create a just world. Portland, OR: Radical Transformation Media, 2017.
[649] Oppression and the body: roots, resistance, and resolutions. Ed. Caldwell C, Bennett Leighton L. Berkeley, CA: North Atlantic Books, 2018.
[650] Semple RJ, Lee J, Rosa D, Miller LF. A randomized trial of mindfulness-based cognitive therapy for children: Promoting mindful attention to enhance social-emotional resiliency in children. Journal of Child and Family Studies. 2010; 19(2): 218–229.
[651] Diamond A, Lee K. Interventions shown to aid executive function development in children 4 to 12 years old. Science. 2011; 333(6045): 959-964.
[652] Napoli M, Krech PR, Holley LC. Mindfulness training for elementary school students: The Attention Academy. Journal of Applied School Psychology. 2005; 21(1): 99–123.
[653] Bögels S, Hoogstad B, van Dun L, de Schutter S, Restifo K. Mindfulness training for adolescents with externalizing disorders and their parents. Behavioural and Cognitive Psychotherapy. 2008; 36(2): 193-209. Cognitive Psychotherapy. 2008; 36(02): 193–209.
[654] van der Oord S, Bögels SM, & Peijnenburg D. The effectiveness of mindfulness training for children with ADHD and mindful parenting for their parents. Journal of Child and Family Studies. 2012; 21(1): 139–147.
[655] Zylowska L, Ackerman DL, Yang MH, Futrell JL, Horton NL, Hale TS. Mindfulness meditation training in adults and adolescents with ADHD: A feasibility
study. Journal of Attention Disorders. 2008; 11(6): 737–746.
[656] Zoogman S, Goldberg SB, Hoyt WT, Miller L. Mindfulness interventions with youth: a meta-analysis. Mindfulness. 2014. Online: DOI 10.1007/s12671-013-0260-4.
[657] Brock LL, Rimm-Kaufman SE, Nathanson L, Grimm KJ. The contributions of "hot" and "cool" executive function to children's academic achievement,

learning-related behaviors, and engagement in kindergarten. Early Childhood Research Quarterly. 2009; 24(3): 337–349.
[658] Bull R, Espy KA, Wiebe SA. Short-term memory, working memory, and executive functioning in preschoolers: Longitudinal predictors of mathematical achievement at age 7 years. Developmental Neuropsychology. 2008; 33(3): 205–228.
[659] Anderson, P. Assessment and development of executive function (EF) during childhood. Child Neuropsychology. 2002; 8(2): 71–82.
[660] Flook L, Smalley SL, Kitil MJ, Galla BM, Kaiser-Greenland S, Locke J. Effects of mindful awareness practices on executive functions in elementary
school children. Journal of Applied School Psychology. 2010; 26(1): 70–95.
[661] Greenberg MT, Weissberg RP, O'Brien MU, Zins JE, Fredericks L, Resnik H. Enhancing school-based prevention and youth development through coordinated social, emotional, and academic learning. American Psychologist. 2003; 58(6–7): 466–474.
[662] Steinberg L. Adolescent development and juvenile justice. Annual Review of Clinical Psychology. 2009; 5: 459–485.
[663] Durlak JA, Weissberg RP, Dymnicki AB, Taylor RD, Schellinger KB. The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. Child Development. 2011; 82(1): 405–432.
[664] Bögels S, Hoogstad B, van Dun L, de Schutter S, Restifo K. Mindfulness training for adolescents with externalizing disorders and their parents. Behavioural and Cognitive Psychotherapy. 2008; 36(02): 193–209.
[665] van der Oord S, Bögels SM, Peijnenburg D. The effectiveness of mindfulness training for children with ADHD and mindful parenting for their parents. Journal of Child and Family Studies. 2012; 21(1): 139–147.
[666] Barnert ES, Himelstein S, Herbert S, Garcia-Romeu A, Chamberlain LJ. Innovations in practice: Exploring an intensive meditation intervention for incarcerated
youth. Child and Adolescent Mental Health. 2014; 19(1): 69–73.
[667] Beauchemin J, Hutchins TL, Patterson F. Mindfulness meditation may lesson anxiety, promote social skills, and improve academic performance among adolescents with learning disabilities. Complementary Health Practice Review. 2008; 13(1): 34–45
[668] Sibinga EMS, Kerrigan D, Stewart M, Johnson K, Magyari T, Ellen JM. Mindfulness-based stress reduction for urban youth. Journal of Alternative and Complementary Medicine. 2011; 17(3): 213–218.
[669] Tan, L., & Martin, G. (2013). Taming the adolescent mind: Preliminary report of a mindfulness-based psychological intervention for adolescents with clinical heterogeneous mental health diagnoses. Clinical Child Psychology and Psychiatry. 2013; 18(2): 300–312.
[670] Schonert-Reichl KA, Lawlor MS. The effects of a mindfulness-based education program on pre-and early adolescents' well-being and social and emotional competence. Mindfulness. 2010; 1(3): 137–151.
[671] Berger D, Silver E, Stein R. Effects of yoga on inner-city children's well-being: a pilot study. Alternative Therapies in Health and Medicine. 2009; 15: 36–42.
[672] Sibinga EM, Perry-Parrish C, Chung SE, Johnson SB, Smith M, Ellen JM. School-based mindfulness instruction for urban male youth: a small randomized controlled trial. Preventive Medicine. 2013; 57(6): 799–801
[673] American Academy of Pediatrics. Mind-body therapies in children and youth: SECTION ON INTEGRATIVE MEDICINE. Pediatrics. 2016; 138(3): e1-e12. DOI: 10.1542/peds.2016-1896.
[674] Diamond A, Lee K. Interventions shown to aid executive function development in children 4 to 12 years old. Science. 2011; 333(6045): 959-964.
[675] Flook L, Smalley SL, Kitil MJ, Galla BM, Kaiser-Greenland S, Locke J. Effects of mindful awareness practices on executive functions in elementary
school children. Journal of Applied School Psychology. 2010; 26(1): 70–95.
[676] Parker AE, Kupersmidt JB, Mathis ET, et al. The impact of mindfulness education on elementary school students: evaluation of the master mind program. Advances in School Mental Health Promotion. 2014; 7(3): 184–204.
[677] Gallant SN. Mindfulness meditation practice and executive functioning: breaking down the benefit. Consciousness and Cognition. 2016; 40: 116-130.
[678] Greenberg MT, Weissberg RP, O'Brien MU, Zins JE, Fredericks L, Resnik H. Enhancing school-based prevention and youth development through coordinated social, emotional, and academic learning. American Psychologist. 2003; 58(6–7): 466–474.
[679] Steinberg L. Adolescent development and juvenile justice. Annual Review of Clinical Psychology. 2009; 5: 459–485.

[680] Black DS. Chapter 16: Mindfulness training for children and adolescents: a state-of-the-science review. Handbook of Mindfulness: Theory, Research, and Practice. Ed. Brown KW, Creswell JD, Ryan RM. New York: Guilford Publications, 2014: 283-310.
[681] Biegel GM, Brown KW, Shapiro SL, Schubert CM. Mindfulness-based stress reduction for the treatment of adolescent psychiatric outpatients: A randomized
clinical trial. Journal of Consulting and Clinical Psychology. 2009; 77(5): 855–866.
[682] Brown KW, West AM, Loverich TM, Biegel GM. Assessing adolescent mindfulness: Validation of an adapted mindful attention awareness scale in adolescent normative and psychiatric populations. Psychological Assessment. 2011; 23(4): 1023–1033.
[683] Tan, L., & Martin, G. (2013). Taming the adolescent mind: Preliminary report of a mindfulness-based psychological intervention for adolescents with clinical heterogeneous mental health diagnoses. Clinical Child Psychology and Psychiatry. 2013; 18(2): 300–312.
[684] Whitebird RR, Kreitzer M, Crain AL, Lewis BA, Hanson LR, Enstad CJ. Mindfulness-based stress reduction for family caregivers: a randomized controlled trial. Gerontologist. 2013; 53(4): 676-686.
[685] Kuyken W, Byford S, Taylor RS. Mindfulness-based cognitive therapy to prevent relapse in recurrent depression. Journal of Consulting and Clinical Psychology. 2008; 76(6): 966-978.
[686] Pbert L, Madison JM, Druker S, et al. Effect of mindfulness training on asthma quality of life and lung function: a randomised controlled trial. Thorax.
2012; 67(9): 769-776.
[687] Zoogman S, Goldberg SB, Hoyt WT, Miller L. Mindfulness interventions with youth: a meta-analysis. Mindfulness. 2014. Online: DOI 10.1007/s12671-013-0260-4.
[688] Noggle JJ, Steiner NJ, Minami T, Khalsa SB. Benefits of yoga for psychosocial well-being in a US high school curriculum: a preliminary randomized controlled trial. Journal of Developmental and Behavioral Pediatrics. 2012; 33(3): 193–201.
[689] Sibinga EMS, Webb L, Ghazarian SR, Ellen JM. School-based mindfulness instruction: an RCT. Pediatrics. 2016; 137(1): 1-8.
[690] Sibinga EM, Perry-Parrish C, Chung SE, Johnson SB, Smith M, Ellen JM. School-based mindfulness instruction for urban male youth: a small randomized controlled trial. Preventive Medicine. 2013; 57(6): 799–801
[691] American Academy of Pediatrics. Mind-body therapies in children and youth: SECTION ON INTEGRATIVE MEDICINE. Pediatrics. 2016; 138(3): e1-e12. DOI: 10.1542/peds.2016-1896.
[692] Ciesla JA, Reilly LC, Dickson KS, Emanuel AS, Updegraff JA. Dispositional mindfulness moderates the effects of stress among adolescents: rumination as a mediator. Journal of Clinical Child and Adolescent Psychology. 2012; 41(6): 760-770.
[693] Biegel GM, Brown KW, Shapiro SL, Schubert CM. Mindfulness-based stress reduction for the treatment of adolescent psychiatric outpatients: A randomized
clinical trial. Journal of Consulting and Clinical Psychology. 2009; 77(5): 855–866.
[694] Gregoski MJ, Barnes VA, Tingen MS, Harshfield GA, Treiber FA. Breathing awareness meditation and LifeSkills Training Programs influence upon ambulatory blood pressure and sodium excretion among African American adolescents. Journal of Adolescent Health. 2010; 48: 59–64. doi:10.1016/j.jadohealth.2010.05.019.
[695] Pace TWW, Negi LT, Dodson-Lavelle B, Ozawa-de Silva B, Reddy SD, Cole SP. Engagement with cognitively-based compassion training is associated with
reduced salivary C-reactive protein from before to after training in foster care program adolescents. Psychoneuroendocrinology. 2013; 38(2): 294–299.
[696] Barnes VA, Treiber FA, Davis H. Impact of transcendental meditation on cardiovascular function at rest and during acute stress in adolescents with high normal blood pressure. Journal of Psychosomatic Research. 2001; 51: 597–605.
[697] Whitebird RR, Kreitzer M, Crain AL, Lewis BA, Hanson LR, Enstad CJ. Mindfulness-based stress reduction for family caregivers: a randomized controlled trial. Gerontologist. 2013; 53(4): 676-686.
[698] Pbert L, Madison JM, Druker S, et al. Effect of mindfulness training on asthma quality of life and lung function: a randomised controlled trial. Thorax.
2012; 67(9): 769-776.
[699] Garland EL, Gaylord SA, Boettiger CA, Howard MO. Mindfulness training modifies cognitive, affective, and physiological mechanisms implicated
in alcohol dependence: results of a randomized controlled pilot trial. Journal of Psychoactive Drugs. 2010; 42(2): 177-192.

[700] Ferraioli SJ, Harris SL. Comparative effects of mindfulness and skills-based parent training programs for parents of children with autism:
feasibility and preliminary outcome data. Mindfulness. 2013; 4(2): 89-101.
[701] Broderick PC, Metz S. Learning to BREATHE: A pilot trial of a mindfulness curriculum for adolescents. Advances in School Mental Health Promotion. 2009; 2(1): 35–46.
[702] Himelstein S, Hastings A, Shapiro S, Heery M. Mindfulness training for self-regulation and stress with incarcerated youth: A pilot study. Probation Journal. 2012; 59(2): 151–165.
[703] Kerrigan D, Johnson K, Stewart M, Magyar T, Hutton N, Ellen JM. Perceptions, experiences, and shifts in perspective occurring among urban youth participating in a mindfulness-based stress reduction program. Complementary Therapies in Clinical Practice. 2013; 17(2): 96–101.
[704] Lau N, Hue M. Preliminary outcomes of a mindfulness-based programme for Hong Kong adolescents in schools: Well-being, stress and depressive symptoms. International Journal of Children's Spirituality. 2011; 16(4): 315–330.
[705] Mendelson T, Greenberg MT, Dariotis JK, Gould LF, Rhoades BL, Leaf PJ. Feasibility and preliminary outcomes of a school-based mindfulness intervention for urban youth. Journal of Abnormal Child Psychology. 2010; 38(7): 985–994.
[706] Black DS. Chapter 16: Mindfulness training for children and adolescents: a state-of-the-science review. Handbook of Mindfulness: Theory, Research, and Practice. Ed. Brown KW, Creswell JD, Ryan RM. New York: Guilford Publications, 2014: 283-310.
[707] Ciesla JA, Reilly LC, Dickson KS, Emanuel AS, Updegraff JA. Dispositional mindfulness moderates the effects of stress among adolescents: rumination as a mediator. Journal of Clinical Child and Adolescent Psychology. 2012; 41(6): 760-770.
[708] Bluth K, Roberson PNE, Gaylord SA. A pilot study of a mindfulness intervention for adolescents and the potential role of self-compassion in reducing stress. Explore. 2015; 11: 292-295.
[709] Bostic JQ, Nevarez MD, Potter MP, Prince JB, Benningfield MM, Aguirre BA. Being present at school: implementing mindfulness in schools. Child and Adolescent Psychiatric Clinics of North America. 2015; 24: 245-259.
[710] Oman D, Shapiro SL, Thoresen CE, Plante TG, Flinders T. Meditation lowers stress and supports forgiveness among college students: a randomized control trial. Jounral of American College Health. 2010; 56(5): 569-578.
[711] Shapiro SL, Oman D, Thoresen CE, Plante TG, Flinders T. Cultivating mindfulness: effects on well-being. Journal of Clinical Psychology. 2008; 64(7): 840-862.
[712] Greenberg MT, Weissberg RP, O'Brien MU, Zins JE, Fredericks L, Resnik H. Enhancing school-based prevention and youth development through coordinated social, emotional, and academic learning. American Psychologist. 2003; 58(6–7): 466–474.
[713] Steinberg L. Adolescent development and juvenile justice. Annual Review of Clinical Psychology. 2009; 5: 459–485.
[714] Mendelson T, Greenberg MT, Dariotis JK, Gould LF, Rhoades BL, Leaf PJ. Feasibility and preliminary outcomes of a school-based mindfulness intervention for urban youth. Journal of Abnormal Child Psychology. 2010; 38(7): 985–994.
[715] American Academy of Pediatrics. Mind-body therapies in children and youth: SECTION ON INTEGRATIVE MEDICINE. Pediatrics. 2016; 138(3): e1-e12. DOI: 10.1542/peds.2016-1896.
[716] Sibinga EMS, Webb L, Ghazarian SR, Ellen JM. School-based mindfulness instruction: an RCT. Pediatrics. 2016; 137(1): 1-8.
[717] Perry-Parish C, Copeland-Linder N, Webb L, Sibinga EMS. Mindfulness-based approaches for children and youth. Current Problems in Pediatric and Adolescent Health Care. 2016; 46: 172-178.
[718] Britton WB, Lepp NE, Niles HF, Rocha T, Fisher NE, Gold JS. A randomized controlled pilot trial of classroom based mindfulness meditation compared to an active control condition in sixth-grade children. Journal of School Psychology. 2014; 52(3): 263–278.
[719] Shapiro SL, Oman D, Thoresen CE, Plante TG, Flinders T. Cultivating mindfulness: effects on well-being. Journal of Clinical Psychology. 2008; 64(7): 840-862.
[720] Durlak JA, Weissberg RP, Dymnicki AB, Taylor RD, Schellinger KB. The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. Child Development. 2011; 82(1): 405–432.
[721] Black DS. Chapter 16: Mindfulness training for children and adolescents: a state-of-the-science review. Handbook of Mindfulness: Theory, Research, and Practice. Ed. Brown KW, Creswell JD, Ryan RM. New York: Guilford Publications, 2014: 283-310.

[722] Sibinga EMS, Kerrigan D, Stewart M, Johnson K, Magyari T, Ellen JM. Mindfulness-based stress reduction for urban youth. Journal of Alternative and Complementary Medicine. 2011; 17(3): 213–218.
[723] Tan, L., & Martin, G. (2013). Taming the adolescent mind: Preliminary report of a mindfulness-based psychological intervention for adolescents with clinical heterogeneous mental health diagnoses. Clinical Child Psychology and Psychiatry. 2013; 18(2): 300–312.
[724] Black DS. Chapter 16: Mindfulness training for children and adolescents: a state-of-the-science review. Handbook of Mindfulness: Theory, Research, and Practice. Ed. Brown KW, Creswell JD, Ryan RM. New York: Guilford Publications, 2014: 283-310.
[725] Hölzel BK, Lazar SW, Gard T, Schuman-Olivier Z, Vago DR, Ott U. How does mindfulness meditation work?: Proposing mechanisms of action from a conceptual and neural perspective. Perspectives on Psychological Science. 2011; 6(6): 537–559.
[726] Coholic D, Eys M, Lougheed S. Investigating the effectiveness of an arts-based and mindfulness-based group program for the improvement of resilience in children in need. Journal of Child and Family Studies. 2012; 21(5): 833–844.
[727] Mendelson T, Greenberg MT, Darifotis JK, Gould LF, Rhoades BL, Leaf PJ. Feasibility and preliminary outcomes of a school-based mindfulness intervention for urban youth. Journal of Abnormal Child Psychology. 2010; 38(7): 985–994.
[728] Hölzel BK, Carmody J, Vangel M, Congleton C, Yerramsetti SM, Gard T, Lazar SW. Stress reduction correlates with structural changes in the amygdala. Social, Cognitive, and Affective Neuroscience. 2010; 5: 11–17.
[729] McEwen BS. In pursuit of resilience: stress, epigenetics, and brain plasticity. The Annals of the New York Academy of Sciences – Issue: Advances in Meditation Research. 2016; 1373: 56-64.
[730] Biegel GM, Brown KW, Shapiro SL, Schubert CM. Mindfulness-based stress reduction for the treatment of adolescent psychiatric outpatients: A randomized
clinical trial. Journal of Consulting and Clinical Psychology. 2009; 77(5): 855–866.
[731] Liehr P, Diaz N. A pilot study examining the effect of mindfulness on depression and anxiety for minority children. Archives of Psychiatric Nursing. 2010; 24(1): 69–71.
[732] Semple RJ, Lee J, Rosa D, Miller LF. A randomized trial of mindfulness-based cognitive therapy for children: Promoting mindful attention to enhance social-emotional resiliency in children. Journal of Child and Family Studies. 2010; 19(2): 218–229.
[733] Craner JR, Sawchuk CN, Smyth KT. Outcomes of a 6-week cognitive-behavioral and mindfulness group intervention in primary care. Families, Systems, and Health. 2016; 34(3): 250-259.
[734] Hilt LM, Pollak SD. Getting out of rumination: Comparison of three brief interventions in a sample of youth. Journal of Abnormal Child Psychology. 2012; 40(7): 1157–1165.
[735] Muris P, Roelofs J, Meesters C, Boomsma P. Rumination and worry in nonclinical adolescents. Cognitive Therapy and Research. 2004; 28(4): 539–554.
[736] Sibinga EMS, Kerrigan D, Stewart M, Johnson K, Magyari T, Ellen JM. Mindfulness-based stress reduction for urban youth. Journal of Alternative and Complementary Medicine. 2011; 17(3): 213–218.
[737] Tan, L., & Martin, G. (2013). Taming the adolescent mind: Preliminary report of a mindfulness-based psychological intervention for adolescents with clinical heterogeneous mental health diagnoses. Clinical Child Psychology and Psychiatry. 2013; 18(2): 300–312.
[738] Bremner JD, Vythilingam M, Anderson G, Vermetten E, McGlashan T, Heninger G. Assessment of the hypothalamic–pituitary–adrenal axis over a 24-hour
diurnal period and in response to neurophysiological challenges in women with and without childhood sexual abuse and posttraumatic stress disorder. Biological Psychiatry. 2003; 54(7): 710–718.
[739] Heim C, Nemeroff CB. The role of childhood trauma in the neurobiology of mood and anxiety disorders: Preclinical and clinical studies. Biological Psychiatry. 2001; 49(12): 1023–1039.
[740] Tyrka, A. R., Wier, L., Price, L. H., Ross, N., Anderson, G. M., Wilkinson, C. W., et al. Childhood parental loss and adult hypothalamic–pituitary–adrenal function. Biological Psychiatry. 2008; 63(12): 1147–1154.
[741] Gaylord SA, Palsson OS, Garland EL. Mindfulness training reduces the severity of irritable bowel syndrome in women: results of a randomized controlled trial. American Journal of Gastroenterology. 2011; 106(9): 1678-1688.
[742] Schmidt S, Grossman P, Schwarzer B, Jena S, Naumann J, Walach H. Treating fibromyalgia with mindfulness-based stress reduction: results from a 3-armed randomized controlled trial. Pain. 2011; 152(2): 361-369.
[743] Lee SH, Ahn SC, Lee YJ, Choi TK, Yook KH, Suh SY. Effectiveness of a meditation-based stress management program as an adjunct to pharmacotherapy in patients with anxiety disorder. Journal of Psychosomatic Research. 2007; 62(2): 189-195.

[744] Hoge EA, Bui E, Marques L. Randomized controlled trial of mindfulness meditation for generalized anxiety disorder: effects on anxiety and stress reactivity. Journal of Clinical Psychiatry. 2013; 74(8): 786-792.
[745] Goyal M, Singh S, Sibinga EMS, Gould NF, Rowland-Seymour A, Sharma R, Berger Z, Sleicher D, Maron DD, Shihab HM, Ranasinghe PD, Linn S, Saha S, Bass EB, Haythornthwaite JA. Meditation programs for psychological stress: a systematic review and meta-analysis. JAMA Internal Medicine. 2014; 174(3): 357-368.
[746] Biegel GM, Brown KW, Shapiro SL, Schubert CM. Mindfulness-based stress reduction for the treatment of adolescent psychiatric outpatients: A randomized
clinical trial. Journal of Consulting and Clinical Psychology. 2009; 77(5): 855–866.
[747] Liehr P, Diaz N. A pilot study examining the effect of mindfulness on depression and anxiety for minority children. Archives of Psychiatric Nursing. 2010; 24(1): 69–71.
[748] Henderson DX, DeCuir-Gunby J, Gill V. "It *really* takes a village": a socio-ecological model of resilience for prevention among disadvantaged ethnic minority youth. Journal of Primary Prevention. 2016; 37: 469-485.
[749] Whitebird RR, Kreitzer M, Crain AL, Lewis BA, Hanson LR, Enstad CJ. Mindfulness-based stress reduction for family caregivers: a randomized controlled trial. Gerontologist. 2013; 53(4): 676-686.
[750] Goyal M, Singh S, Sibinga EMS, Gould NF, Rowland-Seymour A, Sharma R, Berger Z, Sleicher D, Maron DD, Shihab HM, Ranasinghe PD, Linn S, Saha S, Bass EB, Haythornthwaite JA. Meditation programs for psychological stress: a systematic review and meta-analysis. JAMA Internal Medicine. 2014; 174(3): 357-368.
[751] Chiesa A, Malinowski P. Mindfulness-based approaches: are they all the same? Journal of Clinical Psychology. 2011; 67(4): 404-424.
[752] Sibinga EMS, Webb L, Ghazarian SR, Ellen JM. School-based mindfulness instruction: an RCT. Pediatrics. 2016; 137(1): 1-8.
[753] Williams MG, Crane C, Barnhofer T, Brennan K, Duggan DS, Fennell MJV, Hackmann A, Krusche A, Muse K, Von Rohr IR, Shah D, Crane RS, Eames C, Jones M, Radford S, Silverton S, Sun Y, Weatherley-Jones E, Whitaker CJ. Minfulness-based cognitive therapy for preventing relapse in recurrent depression: a randomized dismantling trial. Jounral of Consulting and Clinical Psychology. 2014; 82(2): 275-286.
[754] Poppelaars M, Tak YR, Lichtwarck-Aschoff A, Engels RCME, Lobel A, Merry SN, Lucassen MFG, Granic I. A Randomized controlled trial comparing two cognitive-behavioral programs for adolescent girls with subclinical depression: a school-based program (Op Volle Kracht) and a computerized program (SPARX). Behaviour Research and Therapy. 2016; 80: 33-42.
[755] Shirk SR, DePrince AP, Crisostomo PS. Cognitive behavioral therapy for depressed adolescents exposed to interpersonal trauma: an initial effectiveness trial. American Psychological Association. 2013; 51(1): 167-179.
[756] Craner JR, Sawchuk CN, Smyth KT. Outcomes of a 6-week cognitive-behavioral and mindfulness group intervention in primary care. Families, Systems, and Health. 2016; 34(3): 250-259.
[757] Schonert-Reichl KA, Oberle E, Lawlor MS, Abbott D, Thomson K, Obertlander TF, Diamond A. The effects of a mindfulness-based education program on pre-and early adolescents' well-being and social and emotional competence. Mindfulness. 2010; 1(3): 137–151.
[758] Roeser RW, Pinela C. Mindfulness and compassion training in adolescence: A developmental contemplative science perspective.
New Directions for Youth Development. 2014; 9–30. http://dx.doi.org/10.1002/yd.20094.
[759] Durlak JA, Weissberg RP, Dymnicki AB, Taylor RD, Schellinger KB. The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. Child Development. 2011; 82(1): 405–432.
[760] Oman D, Shapiro SL, Thoresen CE, Plante TG, Flinders T. Meditation lowers stress and supports forgiveness among college students: a randomized control trial. Jounral of American College Health. 2010; 56(5): 569-578.
[761] Biegel GM, Brown KW, Shapiro SL, Schubert CM. Mindfulness-based stress reduction for the treatment of adolescent psychiatric outpatients: A randomized
clinical trial. Journal of Consulting and Clinical Psychology. 2009; 77(5): 855–866.
[762] Sibinga EMS, Kerrigan D, Stewart M, Johnson K, Magyari T, Ellen JM. Mindfulness-based stress reduction for urban youth. Journal of Alternative and Complementary Medicine. 2011; 17(3): 213–218.
[763] Tan, L., & Martin, G. (2013). Taming the adolescent mind: Preliminary report of a mindfulness-based psychological intervention for adolescents with clinical heterogeneous mental health diagnoses. Clinical Child Psychology and Psychiatry. 2013; 18(2): 300–312.
[764] Schonert-Reichl KA, Lawlor MS. The effects of a mindfulness-based education program on pre- and early adolescents wellbeing and social and emotional
competence. Mindfulness 2010; 1(3): 137–151.

[765] Napoli M, Krech PR, Holley LC. Mindfulness training for elementary school students: The Attention Academy. Journal of Applied School Psychology. 2005; 21(1): 99–123.
[766] Hayes SC, Luoma JB, Bond FW, Masuda A, Lillis J. Acceptance and commitment therapy: model, processes, and outcomes. Behaviour Research and Therapy. 2006; 44: 1-25.
[767] Black DS. Chapter 16: Mindfulness training for children and adolescents: a state-of-the-science review. Handbook of Mindfulness: Theory, Research, and Practice. Ed. Brown KW, Creswell JD, Ryan RM. New York: Guilford Publications, 2014: 283-310.
[768] Durlak JA, Weissberg RP, Dymnicki AB, Taylor RD, Schellinger KB. The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. Child Development. 2011; 82(1): 405–432.
[769] Sibinga EMS, Kerrigan D, Stewart M, Johnson K, Magyari T, Ellen JM. Mindfulness-based stress reduction for urban youth. Journal of Alternative and Complementary Medicine. 2011; 17(3): 213–218. Online: doi:10.1089/acm.2009.0605.
[770] Tan, L., & Martin, G. (2013). Taming the adolescent mind: Preliminary report of a mindfulness-based psychological intervention for adolescents with clinical heterogeneous mental health diagnoses. Clinical Child Psychology and Psychiatry. 2013; 18(2): 300–312.
[771] Sibinga EMS, Kerrigan D, Stewart M, Johnson K, Magyari T, Ellen JM. Mindfulness-based stress reduction for urban youth. Journal of Alternative and Complementary Medicine. 2011; 17(3): 213–218. Online: doi:10.1089/acm.2009.0605.
[772] Chan CS, Rhodes JE, Howard WJ, Lowe SR, Schwartz SEO, Herrera C. Pathways of influence in school-based mentoring: the mediating role of parent and teacher relationships. Journal of School Psychology. 2013; 51(1): 129-142. doi:10.1016/j.jsp.2012.10.001.
[773] Brock LL, Rimm-Kaufman SE, Nathanson L, Grimm KJ. The contributions of "hot" and "cool" executive function to children's academic achievement,
learning-related behaviors, and engagement in kindergarten. Early Childhood Research Quarterly. 2009; 24(3): 337–349.
[774] Bull R, Espy KA, Wiebe SA. Short-term memory, working memory, and executive functioning in preschoolers: Longitudinal predictors of mathematical achievement at age 7 years. Developmental Neuropsychology. 2008; 33(3): 205–228.
[775] Anderson, P. Assessment and development of executive function (EF) during childhood. Child Neuropsychology. 2002; 8(2): 71–82.
[776] Barnes VA, Bauza LV, Treiber FA. Impact of stress reduction on negative school behavior in adolescents. Health and Quality of Life Outcomes. 2003; 1(10). Website: www. biomedcentral.com/content/pdf/1477-7525-1-10.pdf.
[777] Pekrun R, Goetz T, Titz W, Perry RP. Academic emotions in students' self-regulated learning and achievement: A program of qualitative and quantitative
research. Educational Psychologist. 2002; 37(2): 91–105.
[778] Roeser RW, Eccles JS, Freedman-Doan C. Academic functioning and mental health in adolescence patterns, progressions, and routes from childhood. Journal of Adolescent Research. 1999; 14(2): 135–174.
[779] Sibinga EMS, Kerrigan D, Stewart M, Johnson K, Magyari T, Ellen JM. Mindfulness-based stress reduction for urban youth. Journal of Alternative and Complementary Medicine. 2011; 17(3): 213–218.
[780] Graziano PA, Reavis RD, Keane SP, Calkins SD. The role of emotion regulation and children's early academic success. Journal of School Psychology. 2007; 45(1): 3–19.
[781] Greenberg MT, Weissberg RP, O'Brien MU, Zins JE, Fredericks L, Resnik H. Enhancing school-based prevention and youth development through coordinated social, emotional, and academic learning. American Psychologist. 2003; 58(6–7): 466–474.
[782] Steinberg L. Adolescent development and juvenile justice. Annual Review of Clinical Psychology. 2009; 5: 459–485.
[783] Durlak JA, Weissberg RP, Dymnicki AB, Taylor RD, Schellinger KB. The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. Child Development. 2011; 82(1): 405–432.
[784] Cicchetti D, Rogosch FA. Diverse patterns of neurophysiological activity in maltreated children. Development and Psychopathology. 2001; 13(3): 677–693.
[785] Lupien SJ, Fiocco A, Wan N, Maheu F, Lord C, Schramek T. Stress hormones and human memory function across the lifespan. Psychoneuroendocrinology.
2005; 30(3): 225–242.

[786] Tarullo AR, Gunnar MR. Child maltreatment and the developing HPA axis. Hormones and Behavior. 2006; 50(4): 632–639.
[787] Bremner JD, Vythilingam M, Anderson G, Vermetten E, McGlashan T, Heninger G. Assessment of the hypothalamic–pituitary–adrenal axis over a 24-hour
diurnal period and in response to neurophysiological challenges in women with and without childhood sexual abuse and posttraumatic stress disorder. Biological Psychiatry. 2003; 54(7): 710–718.
[788] Tyrka, A. R., Wier, L., Price, L. H., Ross, N., Anderson, G. M., Wilkinson, C. W., et al. Childhood parental loss and adult hypothalamic–pituitary–adrenal function. Biological Psychiatry. 2008; 63(12): 1147–1154.
[789] Zoogman S, Goldberg SB, Hoyt WT, Miller L. Mindfulness interventions with youth: a meta-analysis. Mindfulness. 2014. Online: DOI 10.1007/s12671-013-0260-4.
[790] Williams MG, Crane C, Barnhofer T, Brennan K, Duggan DS, Fennell MJV, Hackmann A, Krusche A, Muse K, Von Rohr IR, Shah D, Crane RS, Eames C, Jones M, Radford S, Silverton S, Sun Y, Weatherley-Jones E, Whitaker CJ. Mindfulness-based cognitive therapy for preventing relapse in recurrent depression: a randomized dismantling trial. Jounral of Consulting and Clinical Psychology. 2014; 82(2): 275-286.
[791] Ortiz R, Sibinga EM. The role of mindfulness in reducing the adverse effects of childhood stress and trauma. Children. 2017; 4(16): 1-19. Doi: 10.3390/children4030016.
[792] Williams MG, Crane C, Barnhofer T, Brennan K, Duggan DS, Fennell MJV, Hackmann A, Krusche A, Muse K, Von Rohr IR, Shah D, Crane RS, Eames C, Jones M, Radford S, Silverton S, Sun Y, Weatherley-Jones E, Whitaker CJ. Mindfulness-based cognitive therapy for preventing relapse in recurrent depression: a randomized dismantling trial. Jounral of Consulting and Clinical Psychology. 2014; 82(2): 275-286.
[793] McNulty GF, Forand AQ, Meyers D. Comparison of scores for abused and non-abused young adults on the Psychological Trauma and Resources Scale. Psychological Reports. 2004; 94: 687-693.
[794] Biegel GM, Brown KW, Shapiro SL, Schubert CM. Mindfulness-based stress reduction for the treatment of adolescent psychiatric outpatients: A randomized
clinical trial. Journal of Consulting and Clinical Psychology. 2009; 77(5): 855–866.
[795] Pace TWW, Negi LT, Dodson-Lavelle B, Ozawa-de Silva B, Reddy SD, Cole SP. Engagement with cognitively-based compassion training is associated with
reduced salivary C-reactive protein from before to after training in foster care program adolescents. Psychoneuroendocrinology. 2013; 38(2): 294–299.
[796] Papadonatos GD, Williams DM, Jennings EG, Napolitano MA, Bock BC, Dunsiger S. Marcus BH.
[797] Glanz K, River BK, Viswanath K. Health Behavior and Health Education: Theory, Research, and Practice. Fourth Edition. San Francisco: Jossey-Bass, 2008. Print. Citation for entire paragraph. Mediators of physical activity behavior change: findings from a 12-month randomized control trial. Health Psychology. 2012; 31(4): 512-520.
[798] Tak LM, Kingma EM, van Ockenburg SL, Ormel J, Rosmalen JGM. Age- and sex-specific associations between adverse life events and functional bodily symptoms in the general population. Journal of Psychosomatic Research. 2015; 79: 112-116.
[799] Tak LM, Kingma EM, van Ockenburg SL, Ormel J, Rosmalen JGM. Age- and sex-specific associations between adverse life events and functional bodily symptoms in the general population. Journal of Psychosomatic Research. 2015; 79: 112-116.
[800] Halfton N, Larson K, Son J, Lu M, Bethell C. Income inequality and the differential effect of adverse childhood experiences in US children. Academic Pediatrics. 2017; 17(7S): S70-S78.
[801] Center for Disease Control and Prevention (CDC). About the CDC-Kaiser ACE Study. www.cdc.gov/violenceprevention/acestudy/about.html. Accessed Aug. 28-Sept. 6, 2016.
[802] Cronholm PF, Forke CM, Wade R, Bair-Merritt MH, Davis M, Harkins-Schwarz M, Pachter LM, Fein JA. Adverse childhood experiences: expanding the concept of adversity. American Journal of Preventive Medicine. 2015; 49(3): 354-361. (Note: Appendix Table 1 includes specific question wording and answer choices.)
[803] Wade R, Becker BD, Bevans KB, Ford DC, Forrest CB. Development and evaluation of a short adverse childhood experiences measure. American Journal of Preventive Medicine. 2017; 52(2): 163-172.
[804] Finkelhor D, Shattuck A, Turner H, Hamby S. Improving the Adverse Childhood Experiences Study Scale. Journal of the American Medical Association Pediatrics. 2013;167(1):70–75
[805] Cronholm PF, Forke CM, Wade R, Bair-Merritt MH, Davis M, Harkins-Schwarz M, Pachter LM, Fein JA. Adverse childhood experiences: expanding the concept of adversity. American Journal of Preventive Medicine. 2015; 49(3): 354-361.
[806] Mersky JP, Janczewski CE, Topitzes J. Rethinking the measurement of adversity: moving toward second-generation research on adverse childhood experiences. Child Maltreatment. 2017; 22(1): 58-68.

[807] Bethell C, Gombojav N, Solloway M, Wissow L. Adverse childhood experiences, resilience and mindfulness-based approaches: common denominator issues for children with emotional, mental, or behavioral problems. Child and Adolescent Pyschiatric Clinics of North America. 2016; 25(2): 139-56.
[808] Giovanelli A, Reynolds AJ, Mondi CF, Ou S. Adverse childhood experiences and adult well-being in a low-income, urban cohort. Pediatrics. 2016; 137(4): 1-13.
[809] Brockie TN, Dana-Sacco G, Wallen GR, Wilcox HC, Campbell JC. The Relationship of Adverse Childhood Experiences to PTSD, Depression, Poly-Drug Use and Suicide Attempt in Reservation-Based Native American Adolescents and Young Adults. American Journal of Community Psychology. 2015; 55(3-4): 411-421.
[810] Thompson R, Flaherty EG, English DJ, Litrownik AJ, Dubowitz H, Kotch J, Runyan D. Trajectories of Adverse Childhood Experiences and Self-Reported Health at Age 18. Academic Pediatrics. 2015; 15(5): 503-509.
[811] Friedman EM, Montez JK, Sheehan CM, Guenewald TL, Seeman TE. Childhood adversities and adult cardiometabolic health: does the quantity, timing, and type of adversity matter? Journal of Aging and Health. 2015; 27(8): 1311-1338. doi: 10.1177/0898264315580122. [Epub 2015 Apr 22.]
[812] DeSantis SM, Baker NL, Back SE, Spratt E, Ciolino JD, Moran-Santa Maria M, Dipankar B, Brady KT. Gender differences in the effect of early life trauma on hypothalamic-pituitary-adrenal axis functioning. Depression and Anxiety. 2011; 28(5): 383-392.
[813] Friedman EM, Montez JK, Sheehan CM, Guenewald TL, Seeman TE. Childhood adversities and adult cardiometabolic health: does the quantity, timing, and type of adversity matter? Journal of Aging and Health. 2015; 27(8): 1311-1338. doi: 10.1177/0898264315580122. [Epub 2015 Apr 22.]
[814] Poletti S, Aggio V, Brioschi S, Bollettini I, Falini A, Colombo C, Benedetti F. Impact of early and recent stress on white matter microstructure in major depressive disorder. Journal of Affective Disorders. 2017; 225: 289-297. Doi http://dx.doi.org/10.1016/j.jad.2017.08.017. [Epub ahead of print]
[815] DeSantis SM, Baker NL, Back SE, Spratt E, Ciolino JD, Moran-Santa Maria M, Dipankar B, Brady KT. Gender differences in the effect of early life trauma on hypothalamic-pituitary-adrenal axis functioning. Depression and Anxiety. 2011; 28(5): 383-392.
[816] Friedman EM, Montez JK, Sheehan CM, Guenewald TL, Seeman TE. Childhood adversities and adult cardiometabolic health: does the quantity, timing, and type of adversity matter? Journal of Aging and Health. 2015; 27(8): 1311-1338. doi: 10.1177/0898264315580122. [Epub 2015 Apr 22.]
[817] Strand VC, Pasquale LE, Sarmiento TL / Children F.I.R.S.T./Fordham University Graduate School of Social Service. Child and adolescent trauma measures: a review.
[818] http://www.unc.edu/depts/sph/longscan/
[819] https://www.unicef.org/evaldatabase/files/MICS.pdf
[820] Finkelhor D, Shattuck A, Turner H, Hamby S. Improving the Adverse Childhood Experiences Study Scale. Journal of the American Medical Association Pediatrics. 2013;167(1):70–75
[821] Cronholm PF, Forke CM, Wade R, Bair-Merritt MH, Davis M, Harkins-Schwarz M, Pachter LM, Fein JA. Adverse childhood experiences: expanding the concept of adversity. American Journal of Preventive Medicine. 2015; 49(3): 354-361.
[822] Mersky JP, Janczewski CE, Topitzes J. Rethinking the measurement of adversity: moving toward second-generation research on adverse childhood experiences. Child Maltreatment. 2017; 22(1): 58-68.
[823] Finkelhor D, Shattuck A, Turner H, Hamby S. Improving the Adverse Childhood Experiences Study Scale. Journal of the American Medical Association Pediatrics. 2013;167(1):70–75
[824] Mersky JP, Janczewski CE, Topitzes J. Rethinking the measurement of adversity: moving toward second-generation research on adverse childhood experiences. Child Maltreatment. 2017; 22(1): 58-68.
[825] Finkelhor D, Shattuck A, Turner H, Hamby S. Improving the Adverse Childhood Experiences Study Scale. Journal of the American Medical Association Pediatrics. 2013;167(1):70–75
[826] Bethell C, Gombojav N, Solloway M, Wissow L. Adverse childhood experiences, resilience and mindfulness-based approaches: common denominator issues for children with emotional, mental, or behavioral problems. Child and Adolescent Pyschiatric Clinics of North America. 2016; 25(2): 139-56.
[827] Giovanelli A, Reynolds AJ, Mondi CF, Ou S. Adverse childhood experiences and adult well-being in a low-income, urban cohort. Pediatrics. 2016; 137(4): 1-13.
[828] Mersky JP, Janczewski CE, Topitzes J. Rethinking the measurement of adversity: moving toward second-generation research on adverse childhood experiences. Child Maltreatment. 2017; 22(1): 58-68.
[829] Brockie TN, Dana-Sacco G, Wallen GR, Wilcox HC, Campbell JC. The Relationship of Adverse Childhood Experiences to PTSD, Depression, Poly-Drug Use and Suicide Attempt in Reservation-Based Native American Adolescents and Young Adults. American Journal of Community Psychology. 2015; 55(3-4): 411-421.

[830] Cronholm PF, Forke CM, Wade R, Bair-Merritt MH, Davis M, Harkins-Schwarz M, Pachter LM, Fein JA. Adverse childhood experiences: expanding the concept of adversity. American Journal of Preventive Medicine. 2015; 49(3): 354-361.

Curriculum Vitae

BIOGRAPHICAL SKETCH

Gia Naranjo-Rivera is a multiracial, LGBTQ+ equity leader and a PhD Candidate in Public Health at the Johns Hopkins School of Public Health, with a Brown Community Health Scholarship focused on reducing disparities. Her studies center on human development, equity, trauma, translational research, and systems transformation. Gia is the Founder of Constellation Consulting LLC, offering strategic and transformative program design, research, and evaluation services at the nexus of mindfulness, science, and social justice. She works with public, private, and non-profit agencies, and speaks at local, national and international conferences. Gia also teaches trauma-informed yoga and mindfulness to youth and adults and is completing a yearlong mindful facilitator training program through UCLA's Mindful Awareness Research Center. Over the past 16 years, she has conducted equity research and evaluation, served as a Public Health Analyst at the National Institutes of Health, advanced human rights in the US and abroad, and directed programs for at-risk youth. She holds MPA and MA in International Relations degrees from the Maxwell School at Syracuse University and a BA in Political Science/Human Rights from Columbia University.

Growing up as one of 10 kids in a low-income, trauma- and adversity-affected family and community in Minneapolis, Minnesota has fueled Gia's passion to ameliorate suffering, and promote healing and thriving. Her father and grandfather were human rights activists, political prisoners and torture survivors from Cuba, and her mother came from a high-adversity background. Gia identifies as afro-Cuban with roots in Benin, Togo and north Africa, Taino (native Cuban), and Caucasian (west, south and north European). She was raised practicing Santeria and land and spirit-based practices and is in a lifelong process of decolonizing, re-indigenizing, and reconnecting to her heritage. This includes engaging in global indigenous practices from Lakota and other American Indian nations, Latin America, Africa, and Asia, much of which has been learned from indigenous leaders and healers; this includes sweat lodge, smudging, vision quests, fasting, grief ceremonies, plant medicine, yoga, meditation, Ayurveda, and more. A blend of personal, professional, and academic experiences has been synthesized into the frameworks and approaches Gia uses in her life's work to co-create healing, justice and systems change.

GIA NARANJO-RIVERA, PH.D. CANDIDATE, M.A., M.PA.

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EDUCATION

Johns Hopkins University – School of Public Health 2014-2020
Ph.D. Candidate, Public Health | Focus: Adolescent Development
Brown Community Health Scholar
Dissertation: "Adverse Childhood Events (ACEs), Mindfulness, and Adolescent Health: Assessing How the Peace in Schools Program is Implemented and Affects Student Health in Portland Public High Schools"

Syracuse University – Maxwell School of Citizenship & Public Affairs 2011
M.P.A. Public Administration | Focus: Conflict Resolution
M.A. International Relations (IR) | Focus: Global Foreign Policy, African International Relations
Certificates of Advanced Study: Conflict Studies, Information Security Management
Cramer Scholar, Presidential Scholar

Columbia University 2008
B.A. Political Science, Focus: International Relations, Human Rights
Kluge Scholar, Graduated with Honors

RESEARCH AND EVALUATION POSITIONS

Research and evaluation interests: human health and development, trauma, equity, social justice, mental health, mindfulness, program development, mixed methods, implementation science, transformative evaluation (based in world indigenous practice), translational research

CEO & Consultant | Constellation Consulting LLC (*Gia's consulting company*) 05/2019-present

- ***Transformative Evaluation, strategic planning and technical*** *assistance centering racial equity, social justice, contemplative and trauma-informed practice, and biopsychosocial science*

CLIENTS:

1) PORTLAND PUBLIC SCHOOLS/MOBILIZING FOR COLLEGE: ENGAGE, EMPOWER, ELEVATE/GEAR UP PROGRAM (Aug. 2019-June 2022)
2) MARIN COUNTY – BUILDING A CULTURE OF EQUITY AND BELONGING IN MARIN COUNTY with the Office of Administrators, Executive and Extended Executive Team, and Health and Human Services (June 2020-May 2021)
3) CITY OF SEATTLE SHAPE OF TRUST (SOT) PROJECT with department leaders across city government as part of the *Race and Social Justice Initiative (RSJI), partnership between the Department of Human Resources, Office for Civil Rights, and Office of Arts and Culture* (Mar.-Dec. 2020)
4) KING COUNTY CENTERING NATIVE AMERICAN, INDIGENOUS, AND THE EXPERIENCE OF PEOPLE OF COLOR IN EVALUATION AND TRANSFORMATIVE REFLECTION in county government (Oct. 2019-Mar. 2020)
5) GLADSTONE HIGH SCHOOL (July 2019-May 2020)
6) SUNNYSIDE ELEMENTARY SCHOOL (AUG. 2019-DEC. 2019, TO CONTINUE IN FALL 2020)
7) MEYER MEMORIAL TRUST, a private philanthropy organization (May 2019-Nov. 2019)
8) PEACE IN SCHOOLS, a mindfulness non-profit (Aug. 2016-June 2020)
   - Lead teams in designing and conducting mixed methods transformative evaluation, assessing both process, outcomes, and impacts
   - Provide technical assistance, executive coaching, strategic planning, and trainings
   - Lead developmental evaluation (DE) activities that elevate diverse stakeholder voices, providing opportunities for meaningful input and model anti-racism and -oppression
   - Create transformative tools and systems analysis to promote equity collective healing, and co-liberation

- Offer transformational thinking grounded in frameworks from social justice, racial equity, and global indigenous frameworks from collaborative partners, including Our Bodhi Project (Belonging, Organizing, Decolonizing, Health, Interconnectedness) and WorldTrust
- Provide technical assistance on evaluation design, mixed methods research data collection and analysis, and strategic project planning
- Map and analyze processes, and create path analytics and theories of change

- ***Curriculum Development and Evaluation* – Gladstone High School / Gladstone School District** (Gladstone, Oregon) **and Sunnyside Elementary School** (Portland, Oregon) --
  - Develop and deliver practice- and evidenced-based, equity-promoting, culturally responsive, trauma-informed tailored "inner curricula" for youth, teachers, and families across the district
  - Develop and lead transformative evaluation efforts to capture and map processes and capture outcomes/impacts, using mixed methods and transformative evaluation

Research and Evaluation Assistant | Johns Hopkins University 2014-2019
SCHOOL OF PUBLIC HEALTH – CENTER FOR ADOLESCENT HEALTH

1) **Adverse Childhood Experiences (ACEs) and Adolescent Health** | ADVISOR: ROBERT BLUM, M.D., PH.D.
   - Conducted mixed methods research: literature review, survey, and data analysis
   - Co-wrote an article on measuring adverse childhood events (ACEs) globally

2) **Strengthening Families Program (SFP) / Pan-American Health Organization-WHO** | ADVISOR: KRISTIN MMARI, DR.P.H.
   - Co-conducted an implementation evaluation of SFP in Latin America, a program to prevent child abuse, improve parenting, and reduce risk youth behaviors
   - Conducted 30 interviews in Spanish, Portuguese, and English
   - Created final report and presentation for Pan-American Health Organization (PAHO)

3) **Global Early Adolescences Study (GEAS)** | ADVISOR: KRISTIN MMARI, DR.P.H.
   - Conducted qualitative data analysis for project on gender norms development in early adolescence, as part of the GEAS research team, with a focus on Latin America and inequity along gender, racial, and other lines of division
   - Coded interview and focus group transcripts, and relevant literature using Atlas.ti
   - Developed final codebook and extracted key quotes

4) **LifeSkills Training (LST)** | ADVISOR: BETH MARSHALL, DR.P.H.
   - Developed LST to be implemented in 60 Baltimore schools

CENTER FOR AMERICAN INDIAN HEALTH (CAIH) | DEPARTMENT OF INTERNATIONAL HEALTH

5) **Native American Youth Programs** | ADVISORS: RACHEL CHAMBERS, LAUREN TINGEY
   - Developed program implementation guides, documents, trainings and evaluation materials for two adolescent programs in the Navajo Nation:
     - Respecting the Circle Life (RCL) for sexual and reproductive health
     - Arrowhead Business Groups (ABG) for life and business development skills

Data Consultant | The Women's Collective 04/2014-12/2014
- Led organizational effort to standardize data to comply with federal funding requirements for Ryan White HIV/AIDS programming for underserved HIV-positive women and girls
- Produced all required reports, and developed innovative solutions to capture evaluation data

Public Health Analyst | National Cancer Institute (NCI) / NIH 2011-2014
PUBLIC HEALTH ANALYST | COORDINATING CENTER FOR CLINICAL TRIALS (CCCT) 07/2013-08/2014
- Organized and facilitated high-profile Federal Advisory Committee (FACA) meetings

- Co-developed methods to strategically assess and plan national clinical trials portfolios
- Developed reporting capability for electronic database of cancer clinical trials
- Researched methods to recruit underserved populations to cancer clinical trials

PRESIDENTIAL MANAGEMENT FELLOW (PMF) 07/2011-07/2013

A two-year fellowship to prepare future federal leaders via rotational assignments and training.

OFFICE OF SCIENCE PLANNING & ASSESSMENT (OSPA)

- Trained in diverse evaluation and strategic planning methods (quantitative and qualitative)
- Facilitated strategic planning sessions and managed strategic planning and evaluation projects
- Conducted analysis of the cancer research portfolio focused on reducing health disparities

OFFICE OF COMMUNICATIONS AND EDUCATION (OCE) – COMMUNICATIONS TECHNOLOGY BRANCH

- Designed website and social media (Facebook, Twitter) content and strategic plans
- Created an NCI Data Visualization and Infographics Strategic Plan and toolkit

DIVISION OF CANCER CONTROL & POPULATION SCIENCES (DCCPS) – BEHAVIORAL RESEARCH BRANCH

- Designed educational materials for a Native American health outcomes grant
- Developed a web-based, multilingual data sharing tool for prostate cancer research
- Managed projects, built partnerships, planned strategically, and built capacity

Research Assistant, Syracuse University – Maxwell School of Citizenship & PA 2010-2011

PROGRAM FOR THE ADVANCEMENT OF RESEARCH ON CONFLICT AND COLLABORATION (PARCC)

1) Integrative Framework for Decision-making | ADVISOR: PAUL HIRSCH, PH.D.
    - Co-designed a model to understand trade-offs when making decisions
    - Co-facilitated a training applying it to a local environmental issue
    - Interviewed 20 global environmental organization leaders about decision-making
    - Synthesized findings; co-wrote and co-edited reports for major donor agencies

CAMPBELL PUBLIC AFFAIRS INSTITUTE

2) "The Diversity Opportunity" Book Chapter | ADVISOR: TERRY NEWELL, PH.D.
    - Conducted research on public sector best practices for leveraging diversity
    - Assisted with literature review, data analysis, preparing tables and graphs, writing

S.I. NEWHOUSE SCHOOL OF PUBLIC COMMUNICATION

3) Liberia Elections Project | ADVISOR: KEN HARPER, PH.D.
    - Conducted interviews on voting processes and synthesized into a handbook
    - Organized reporter training to improve media freedom and voter education
    - Set up a geospatial tool (Ushadi) to report and map voting rights abuses

AIDS COMMUNITY RESOURCES, INC.

4) Syringe Exchange Program (M.P.A. capstone project) | ADVISOR: DR. LENARD LOPOO, PH.D.
    - Conducted focus groups and interviews in diverse communities, synthesized findings
    - Co-wrote a Needs Assessment and Implementation Report used by the Department of Health to implement the first Syringe Exchange Program in Syracuse, New York

YOUTH AND COMMUNITY PROGRAM POSITIONS

Parent Educator | Parenting Now! 08/2018-present

- Teach a comprehensive curriculum on child development to parent groups
- Facilitate group discussions and meet individual and group needs

Youth Mindfulness & Yoga Instructor 08/2016-present

- **Ophelia's Place:** mindfulness, yoga and stress management to girls ages 10-18

- **Pursue Fitness**: mindfulness and vinyasa flow classes, including pranayama, mantra and mudra
- **Willamalane Parks and Recreation District**: mom-and-baby and adult yoga classes

Youth Programs Director | North County Recreation District, Nehalem, OR 08/2015-02/2017
- Supervised a team of 14 staff and 30+ volunteers to develop and deliver dynamic enrichment, academics, and athletic youth programs to diverse elementary school children
- Identified and implemented evidence-based programs based on community needs and risks
- Built and maintained partnerships with local public, private, and non-profit organizations
- Developed policies, monitoring and evaluation tools, staff trainings, and operating budget

Facilitator | PARCC Institute on Conflict Studies/Syracuse U., Syracuse, NY 08/2009-05/2011
- Facilitated community governance sessions for the Central New York (CNY) Speaks project
- Guided and managed discussion of community needs and synthesize into policy priorities

Capacity Development Intern | Foundation for Human Rights Initiative, Uganda 05/2010-07/2010
- Researched and wrote reports on vulnerable people's rights, i.e. women, children, etc.
- Wrote $150,000-$1 million grant proposals
- Developed monitoring/evaluation tools for use internally and with external stakeholders

Youth Development Supervisor | Inwood House, New York, NY 04/2009-06/2009
Short-term hire at a teen maternity residence to improve systems before graduate school.
- Supervised 5 staff, and developed systems to manage and track projects and budget
- Provided counseling, crisis intervention, individual development plans for teen moms
- Facilitated Every Person Influences Children (EPIC) training on parenting, child development
- Developed & delivered life skills training: job readiness, communication, conflict resolution

High School Program Coordinator | Harlem Children's Zone (HCZ), New York, NY 03/2008-05/ 2009
- Managed an after-school program; hired, trained and supervised 20 staff and 30+ volunteers
- Executed recruitment plan and increased student participation from 30 to 220
- Developed engaging educational and extracurricular activities with community partners: peer health education, employment program, music and poetry courses, community service

Program Coordinator | America Reads/Columbia University, New York, NY 02/2005-12/2006
- Hired and trained 30 teachers of an afterschool literacy program serving 50 high needs kids
- Doubled size of program over 18 months and developed a supplemental Saturday program
- Managed problem behaviors, provided crisis intervention and responded to abuse cases

UNIVERSITY TEACHING EXPERIENCE

Preparing Future Faculty Program, Johns Hopkins University | Baltimore, MD 09/2017-Present
- A program to explore university faculty career tracks through pedagogical training, mentorship, and developing and teaching (or co-teaching) university courses.

Johns Hopkins University | Baltimore, MD 01/2018
Professor, Krieger School of Arts and Sciences

- Designed and taught "Trauma, Mindfulness, and Yoga in Public Health", an undergraduate course taught to 27 enrolled students during the Winter Intersession in which students:
    - Learn definitions and trends in adverse childhood events (ACEs) and trauma
    - Examine and compare evidence-based mindfulness and yoga approaches to address ACEs and trauma with other interventions (e.g., talk therapy, pharmaceuticals, etc.)
    - Practice secular mindfulness and yoga techniques, integrating theory and practice
- Developed syllabus to meet accreditation standards
- Prepared and delivered lectures, and arranged for guest lecturers
- Created and led yoga and mindfulness exercises to enhance student learning
- Managed online course content (e.g., readings, student questions, etc.)
- Developed and graded all practical exercises, assignments, and final projects

Johns Hopkins Bloomberg School of Public Health | Baltimore, MD 12/2016-03/2017
Teaching Assistant, Department of Population, Family, and Reproductive Health

- Developed syllabus to meet accreditation standards
- Revised and updated lectures to update existing content and add new relevant topics
- Managed online course content (e.g., readings, student questions and commentary, etc.)
- Advised and met with students about paper topic selection and paper writing
- Graded student assignments and entered final grades

PUBLICATIONS (IN PEER-REVIEWED JOURNALS OR PUBLISHED BY ORGANIZATIONS | REVERSE CHRONOLOGICAL)

BOOKS AND MANUALS

Co-author. Center for American Indian Health. Respecting the Circle of Life (RCL): A Pregnancy, STI, and HIV Prevention Program for Native American Youth – Implementation Guide. Baltimore, MD: Johns Hopkins University, 2018.

Co-author. Center for American Indian Health. Arrowhead Business Group: Entrepreneurship Program for Native American Youth – Implementation Guide. Baltimore, MD: Johns Hopkins University, 2018.

Newell T, Grant R, **Naranjo-Rivera G,** Rnayne P. Chapter 7: The Diversity Opportunity, *The Trusted Leader: Building the Relationships that Make Government Work*. Washington, DC: CQ Press/SAGE, 2011.

Naranjo-Rivera G, Burungi H. Human Rights Monitor Handbook. *European Union Instrument for Democracy and Human Rights (EIDHR) and Foundation for Human Rights Initiative*, 2010.

JOURNAL PUBLICATIONS

Blum R, Li M, **Naranjo-Rivera G**. Measuring Adverse Child Experiences among Young Adolescents Globally: Relationships with Depressive Symptoms and Violence Perpetration. *Journal of Adolescent Health*, 2019.

Caldas SV, Turkel R, Nelson A, Pandey S, Wu Y, Broaddus E, **Naranjo-Rivera G,** Winch P. "All of That's Gone Now": The Failure to Sustain Police-Youth Programs in Baltimore City. *The Police Journal: Theory, Practice and Principles*, 2017.

CONFERENCE PUBLICATIONS

Naranjo-Rivera G, Mmari K, Blum R, Weeks F. Familias Fuertes in Latin America & the Caribbean Keys to Effective Implementation, Part 2: Summary of Key Informant Interviews. *Pan-American Health Organization*, 2017.

Naranjo-Rivera G, Jaffe D. Four National Clinical Trials Network (NCTN) Portfolio Analysis Reports written, and summary presentations given to the Clinical Trials and Translational Research Advisory Committee (CTAC) federal advisory committee. *National Cancer Institute*, 2013 and 2014.

Naranjo-Rivera G, Hirsch P. Tools, Methods, and Approaches for Working in a World of Trade-offs: Interviews with Global Conservation Program Leaders & Review of CIFOR Case Narratives. *MacArthur Foundation, CIFOR, PARCC at Syracuse University*, 2011.

Naranjo-Rivera G. Tomorrow Today in India, Brazil, and South Africa: Achieving Successful Slum Youth Uplift in Urban Poverty Epicenters." *Maxwell School of Citizenship and Public Affairs Compendium*, 2009.

PRESENTATIONS, SPEAKING EVENTS, AND EVENT COLLABORATIONS (AT CONFERENCES OR SYMPOSIA)

Naranjo-Rivera G. "Revolutionary Research." Tigard School District Executive Leadership, Tigard, Oregon, 2020.

Naranjo-Rivera G, Sangeeta Balajee S. "Centering the Experience of Native American, Indigenous, and People of Color in Evaluation and Transformative Reflection." King County, Seattle, Washington, 2020.

Naranjo-Rivera, Campbell I, and others. "Queer Town Hall: Mental Health for BIPOC/QTPOC." Basic Rights Organization (BRO), Portland, Oregon, 2020.

Naranjo-Rivera G, Senator Weidan R, Multnomah County Health Commissioner Meiran S, and others. "Multnomah County Youth Mental Health Forum." Portland, Oregon, 2020.

Naranjo-Rivera G. "Revolutionary Research." Portland Public Schools Executive Leadership, Portland, Oregon, 2020.

Naranjo-Rivera G. "Roots and Wings: Mindfulness, Migration, and Healthful Transformation." Cambia Latinx Employee Resource Group (ERG), Portland, Oregon, 2020.

Naranjo-Rivera G (moderator, mindfulness facilitator, and presenter), Siegel D, King S, Morgan C. "Mindfulness, Trauma, and Interpersonal Healing in Education." Mindsight Institute, Portland, Oregon, 2020.

Naranjo-Rivera G. "Youth Mental Health Panel." Cambia, Portland, Oregon, 2019.

Naranjo-Rivera G., Willett B, Morgan C, Cistrunk M. "New Research on Trauma, Love, and Transformation." Science and Non-Duality (SAND) Conference, San Jose, California, 2019.

Naranjo-Rivera G. "Mindfulness, Youth, and Social Justice: A Conversation with Dr. Dan Siegel, Dr. Sará King, and Caverly Morgan." Gala/Fundraiser for Peace in Schools in Portland, Oregon, 2019.

Naranjo-Rivera G. "Adverse Childhood Experiences (ACEs), Mindfulness and Adolescent Health". Speaker at American Public Health Association (APHA) Annual Conference, San Diego, CA, 2018.

Naranjo-Rivera G. "Adverse Childhood Experiences (ACEs) and Trauma, and the Promise of Mindfulness and Yoga as a Public Health Intervention to Reduce Disparities". Mind and Life Institute Summer Research Institute (SRI), Garrison, NY, 2018.

Naranjo-Rivera G, Mmari K, Blum R, Weeks. "Familias Fuertes: Strengthening Families Program (SFP) Implementation in Latin America," International Association for Adolescent Health (IAAH) 11th World Congress, New Delhi, India, 2017.

Naranjo-Rivera G, Mmari K, Blum R, Weeks. "Familias Fuertes: Strengthening Families Program (SFP) Implementation in Latin America." *Pan-American Health Organization Summit (with SFP Stakeholders)*, Panama City, Panama, 2017.

Naranjo-Rivera G, Hesse B. "National Cancer Institute (NCI) Health Information National Trends Survey (HINTS)." *American Public Health Association (APHA) Annual Expo*, Washington, D.C., USA, 2011 and 2012.

Naranjo-Rivera G, Greer L, Cho J. "National Cancer Institute (NCI) Cancer Snapshots." *American Public Health Association (APHA) Annual Expo*, Washington, D.C., USA, 2011 and 2012.

Naranjo-Rivera G. Tomorrow Today in India, Brazil, and South Africa: Achieving Successful Slum Youth Uplift in Urban Poverty Epicenters. *Public Administration in Developing Countries Symposium*, Syracuse, USA, 2009.

HONORS AND AWARDS

Gladstone Education Fund Award | Gladstone School District ($5,300) 2019
Funding to develop, deliver and evaluate evidence-based social-emotional learning (SEL) and mindfulness curriculum that is equity-promoting, trauma-informed, and culturally responsive; train staff across three schools; and offer yoga and mindfulness programming to foster school community.

Excellence in US Public Health Award, Johns Hopkins Bloomberg School of Public Health | Office of Public Health Practice and Training – Student Practice Award 2019
Recognizing outstanding public health practice contributions, given to one PhD student annually for a practice effort that has made or has great potential to make a sustained impact on health outcomes.

Evidence Generation Award, Bloomberg American Health Initiative ($2,500) 2019
An award to support student projects that will collect, analyze, or use evidence to inform decisions about the services, programs, or operations of a community-based partner organization.

Cheryl Alexander Memorial Fund ($500) 2018
Award for a high level of scholarship and outstanding work in the field of adolescent health.

Preparing Future Faculty (PFF) Program | Johns Hopkins University ($1,000+) 2017-2019
A program to explore university faculty career tracks through pedagogical training, mentorship, and developing and teaching (or co-teaching) university courses. Paid per class taught; $1,000 to date.

Brown Scholarship in Community Health ($24,500/year x 5 years) 2014 - 2018
Full 5-year merit-based fellowship for those dedicated to reducing health disparities, especially in vulnerable and minority communities; cohort regularly met with public health leaders and conducts research designed to promote health equity nationally and internationally.

International Association for Adolescent Health (IAAH) Scholarship ($2,000) 2017
A scholarship covering airfare and lodging to deliver an oral presentation of research findings.

Health Resources Services Administration (HRSA) Trainee Fellowship ($5,000) 2015
Money to complete a student-designed applied research project in collaboration with a community partner organization to advance the field of public health.

Hispanic Scholarship Fund (HSF) Scholarship | HSF ($2000) 2015
Award for doctoral students demonstrating academic excellence and promise in their field.

Jean and Sidney Silber Fund | Johns Hopkins University ($500) 2015
Award for outstanding applied work on child and adolescent health and development.

Presidential Management Fellowship (PMF) | National Institutes of Health (NIH) 2013
A nationally competitive two-year fellowship to prepare future federal leaders through rotational placements, training, and mentorships. Completed at NIH's National Cancer Institute 2011-2013.

CyberCorps: Scholarship for Service (SFS) | NSF and Syracuse U. iSchool (~$36,000) 2010 – 2011
National Science Foundation (NSF) program designed to train federal information assurance professionals. Received a Certificate of Advanced Study in Information Security Management.

Foreign Language & Area Studies (FLAS) Fellowship | US Department of Education ($3,000) 2011
Merit-based fellowship for graduate students to train in a foreign language or international studies.

Gold Key International Honour Society ($0) 2010 - 2011
Merit-based award recognizing academic excellence at the undergraduate level.

Dean's Presidential Scholar Award, Syracuse University ($12,000/year x 1 year) 2010 - 2011
Merit-based scholarship given to a student selected by the Dean of the Maxwell School.

Cramer Scholar, Syracuse University ($18,000/year x 2 years) 2009 - 2011
Merit-based graduate student scholarship for leadership potential and academic excellence.

U.S. Department of State's Benjamin A. Gilman International Scholarship ($3,000) 2007
Need-based scholarship to study abroad for a semester in Bahia, Brazil.

Puerto Rican Legal Defense and Education Fund (PRLDEF) LawBound Scholar ($0) 2005 – 2009
Training and preparation to complete the LSAT, attend law school and enter the legal profession.

Kluge Scholar, Columbia University (~$52,000/year x 4 years) 2004 - 2008
Merit-based undergraduate student scholarship for leadership potential and academic excellence.

Dean's List, Columbia University ($0) 2004 - 2008
The equivalent of receiving an "Honors" distinction for academic excellence.

LANGUAGES

- **English**: Native Language
- **Spanish**: Advanced Listener, Speaker, Reading, and Writing
  - Studied abroad in Spain (2007), Mexico (2004), Cuba (2000)
- **Portuguese**: Intermediate/Advanced Listener, Speaker, Reading, and Writing
  - Studied abroad in Portugal (2010), Brazil (2007)

- **French**: Novice Listener, Speaker, Reading, and Writing
- **Chinese** (Mandarin): Novice Listener, Speaker, Reading, and Writing

COMPUTER SKILLS

- **Statistical analysis**: exploratory data analysis, descriptive statistics, create/reformat variables, and conduct regression analysis using Stata
- **Qualitative data analysis**: coding publications and transcripts using Atlas.ti
- **Applications**: advanced skills using Microsoft Word, Excel, PowerPoint, Access, and Outlook
- **Web-based tools**: design websites and social media sites (Facebook, Twitter, etc.)
- **Geospatial tools:** design geocoded maps using Geographic Information Systems (GIS)
- **Social media tools:** Facebook, LinkedIn, Instagram, Twitter, Tic Toc, Snapchat, and others

ADDITIONAL SKILLS

REGISTERED YOGA & MINDFULNESS TEACHER (RYT)

- **Training in Mindfulness Facilitation (TMF) 2020 Cohort**
  01/2020-12/2020
  - UCLA Mindful Awareness Research Center (MARC), year-long training
- **500 RYT** | Yoga Garden San Francisco, 300 hours toward 500 RYT 09/2017-05/2020
  - Vinyasa, hatha, restorative, children/teens, trauma-informed yoga teacher

- **200 RYT** | Three Sisters Yoga, 200 hours; registered with Yoga Alliance 04/2016-05/2016
- **Mindfulness Teacher Training**
  - Peace in Schools, Portland, OR 03/2017, 04-05/2019
  - UCLA Mindful Awareness Research Center, Los Angeles, CA 07/2018
  - Mindful Schools 07/2018
  - Center for Adolescent Studies 05/2019, 09-10/2019

PROFESSIONAL ASSOCIATIONS

NATIONAL ASSOCIATION FOR THE ADVANCEMENT OF COLORED PEOPLE (NAACP), PORTLAND CHAPTER
ROSE CITY JUSTICE
JENEBA PROJECT
UNITE OREGON
YOGA ALLIANCE

REFERENCES

Dr. Kristin Mmari, DrPH | Associate Professor
Department of Population, Family, and Reproductive Health
Also affiliated with the Center for Adolescent Health and the Center for Global Health
Johns Hopkins Bloomberg School of Public Health
615. N. Wolfe Street, Room E4620 | Baltimore, MD 21205
Phone: 410-502-3112
Email: kmmari1@jhu.edu
Relationship: Academic Advisor, former Research Assistant supervisor, former Professor, mentor

Angela Nusom, EdD | Senior Program Manager
Mobilizing for College: Engage, Empower, Elevate (M4C-E3) Program/GEAR UP
Portland Public School District
501 N. Dixon Street | Portland, OR 97227
Phone: 503-351-0323
Email: anusom@pps.net
Relationship: Supervisor, collaborator

Barnaby Willett | Director of Innovation and Partnerships
Peace in Schools
959 SE Division Street | Portland, OR 97214
Phone: 503-764-8494
barnaby@peaceinschools.org
Relationship: Collaborative partner in dissertation research from 2016 to present

Deborah Jaffe, PhD | Program Director
Coordinating Center for Clinical Trials (CCCT)
Office of the Director
National Cancer Institute (NCI)
National Institutes of Health (NIH)
Phone: 240-276-6169
Email: deborah.jaffe@nih.gov
Relationship: Former supervisor

Additional References

Dr. Robert Blum, MD, PhD | Director
Urban Health Institute
Johns Hopkins Bloomberg School of Public Health
2013 E. Monument Street | Baltimore, MD 21205
Phone: 410-955-8544
Email: rblum@jhu.edu
Relationship: mentor, current Research Assistant supervisor, head of Brown Scholars Program, former professor, former supervisor of Teacher Assistant position

Dr. Anne Duggan, ScD | Vice Chair for Research, Professor
Department of Population, Family, and Reproductive Health
Joint appointments: Department of Health Policy & Management, Department of Mental Health, and the School of Medicine
Johns Hopkins Bloomberg School of Public Health, Johns Hopkins Medical Institute
615 N. Wolfe Street, Room E4146 | Baltimore, MD 21205
Phone: 410-614-5280
Email: aduggan@jhu.edu
Relationship: Member of Schoolwide Dissertation Committee, mentor

Rachel Chambers, MPH | Research Associate
Center for American Indian Health
Division of Social and Behavioral Interventions
Department of International Health
Johns Hopkins Bloomberg School of Public Health, Johns Hopkins Medical Institute
415 N. Washington Street, 4th Floor | Baltimore, MD 21231
Phone: 443-287-5157
Email: rstrom3@jhu.edu
Relationship: Supervisor of internship with the Center for American Indian Health